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MOTOR AGE

SOUTH'S FIRST NATIONAL SHOW IN PROGRESS

ATLANTA, Ga., Nov. 8—From the reception given the first national motor car show ever held outside of New York and Chicago, it is evident that the powers that be acted wisely in awarding the N. A. A. M. plum to the Gate City. The entire south is back of the movement and the exhibition, which was formerly opened Saturday afternoon, is being given the support, not only of the municipality and the press, but the people of the south as well. The calloused exhibitor who has been following the shows for years cannot help but be surprised at the great enthusiasm that is being displayed, and it is evident even at this early part of the week that Atlanta is going to have the biggest kind of a success.

When the new Auditorium-Armory first opened its doors and invited the public to have its first look at the segregation of 1910 models, the persistent efforts of Managers Miles and Reeves had netted the installation of all exhibits but three. Of course all could not have spaces in the heart of the building, and considerable ingenuity had to be employed to take full advantage of all the opportunities scattered

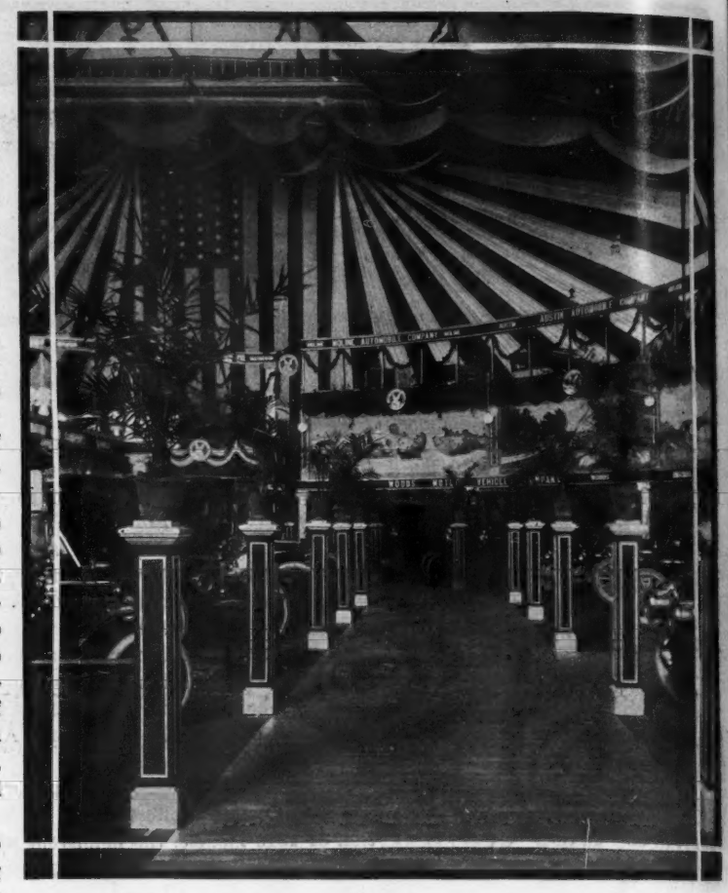
GENERAL VIEW OF ATLANTA SHOW IN AUDITORIUM-ANNEX LAST SATURDAY AFTERNOON

about the structure, which, however, is being explored to its most inaccessible parts by seekers for motor information and instruction, for please keep it in mind that this is the first national show ever held in the south, and the aforesaid south is filling Atlanta's hotels and rooming houses to full capacity. Down here, coincident with the resultful cry for good roads, is the buying of cars to travel over the highways before they are built. Again, while it is true that the cotton crop is only a two-thirds one, the Georgia yield is in excess and the deficiency is in Texas, and with the prices hovering around 15 cents, there is going to be some $60,000,000 ahead of previous years. The deduction is that there will be some dollars with which to buy cars; and the large prophecy stands an excellent chance of fulfillment. Before the show was a day old there came the usual reports of sales, and, discounting the zeal of the salesmen, there remains enough fact to prove the wisdom of those who argued in favor of a southern display of up-to-date models.

In the opening of the show on Saturday afternoon there were some introductory festivities such as are dear to the heart of the southron, which means that speeches figured therein with musical accompaniment. Mayor Maddox contributed the words of welcome in language befitting the occasion, followed by Asa G. Candler, president of the chamber of commerce, who was flanked by prominent members of that body. These included a notable contingent of the leading business men of the city, prominent among them being Clark Howell, editor of the Atlanta Constitution, and one whose efforts did much toward bringing a national show to Atlanta.

Asa Candler is an Atlantian who has hewed his way to success and fortune, and now he is ever ready to do big things for his home city, though the story of his life tells of Georgia cracker antecedents. But now he is rated by many as Atlanta's best asset from a business standpoint, and his belief in the place is indicated by his enormous real estate holdings. In the course of his speech opening the show Mr. Candler said:

"Atlanta's motor exposition marks an era in the development of the wealth and in the quickening of the progress of the southeastern states. When the matter was proposed we undertook to make it an exposition such as no city of equal



ATLANTA NATIONAL SHOW— MAIN AISLE TOWARD ENTRANCE

size in the world ever has had. We are here assembled to formally open this exposition in the fulfillment of that purpose. This exposition is setting forth in motion forces which will do more for the construction of good roads than hitherto has been accomplished. To increase interest in the exposition two great newspapers undertook to locate a great national highway, over which a successful contest tour has taken place from New York city to Atlanta. Another great paper of this city has aroused marked enthusiasm in road building by

ATLANTA NATIONAL SHOW—EXHIBIT OF PACKARD MOTOR CAR CO.

ATLANTA NATIONAL SHOW—ENTRANCE TO AUDITORIUM

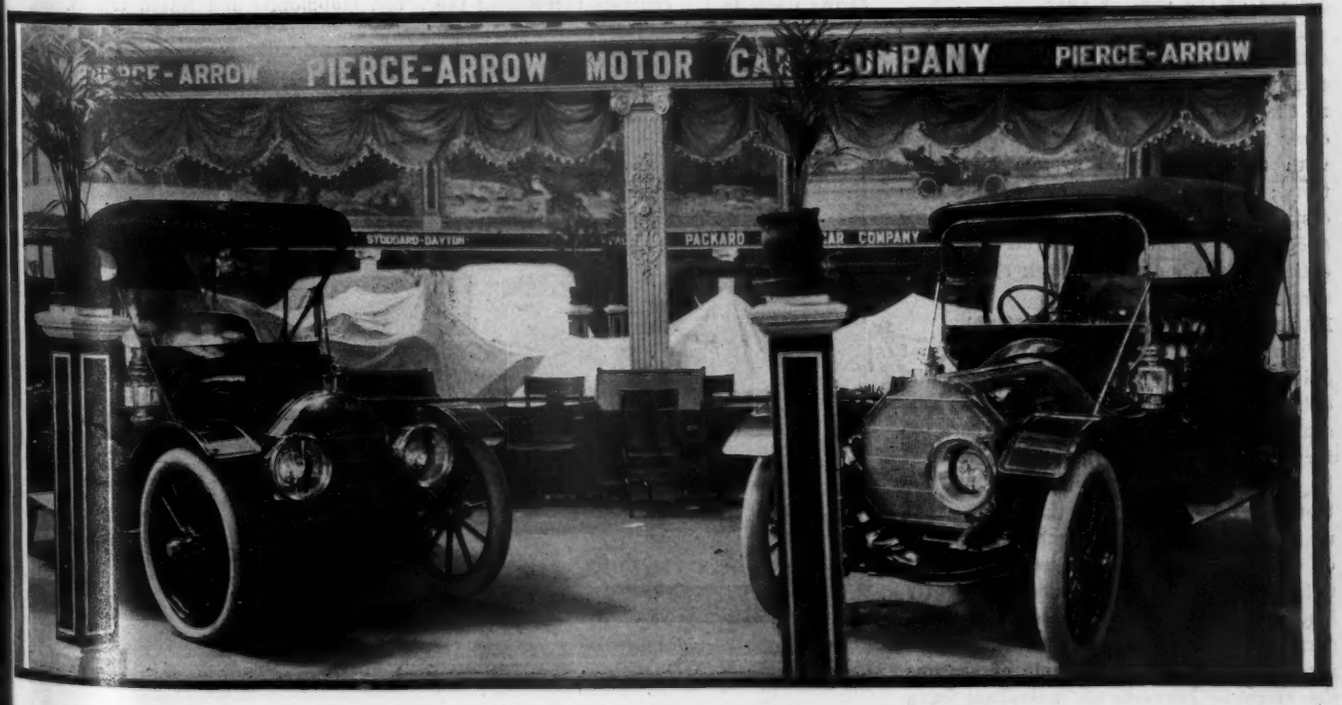
inaugurating a series of tours from every part of the state to the capital. In furtherance of the same end, and moved by an impulse characteristic of Atlanta's great public-spirited citizens, a company has constructed a speedway unsurpassed, if indeed we may not say unequaled, by any similar track in the world.

"If time permitted it would be difficult to show that influences flowing from this exposition will promote more general and intimate association and a better understanding among the people. Distance divides, and that which sets distance aside begets acquaintance, which in the end ripens into friendship. Antipathy between town and country is removed when a method is found, and has come into common use, which brings the people from the country to the town quickly and safely, and sends the townsmen into the country with equal speed and facility. It was but yesterday when it was scarcely safe to operate a motor car in some parts of the country, so great was the prejudice against the horseless carriage. This prejudice is rapidly passing; in fact, is about gone. The people are coming to see that the motor car is an admirable and efficient instrument for promoting both the happiness and usefulness of their families. Besides the contribution of the motor car may thus make to the improvement of family and social life, it will do more to increase the wealth of the country. Man never can be in two places at the same time, nor command the sun to stand still; but by this invention he can cover more ground between suns and thereby bring more things to pass before dark."

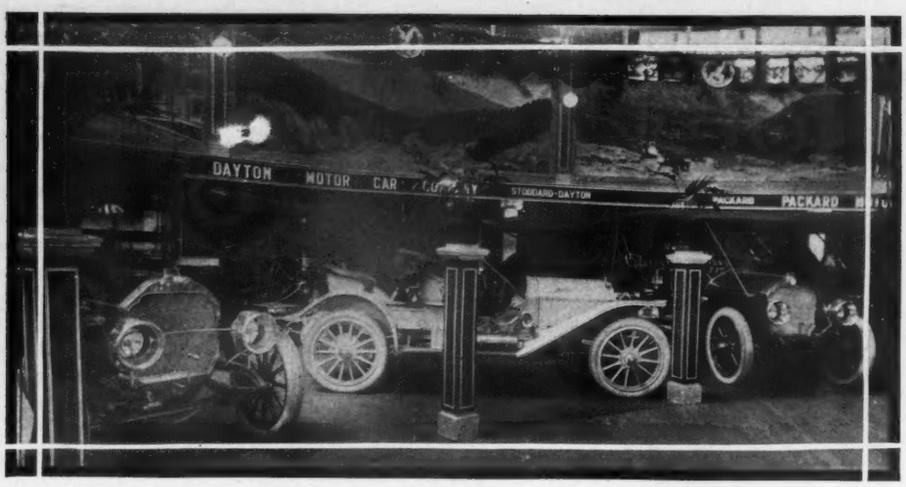
Following the speechmaking the Fifth Regiment band played in succession America, the Star Spangled Banner, and Dixie, the latter selection, of course, evoking the real thing in the way of the old rebel yell. Then the show was in full swing. All this happened in the afternoon with a full house, which was renewed in the evening with an even larger attendance.

Commenting upon the show now in progress, Manager S. A. Miles has this to say: "Manufacturers are looking forward to a satisfactory business during this first national show in Atlanta, and it is fair to assume that if the event is as successful as they anticipate the industry will be called upon to support three instead of two national events —New York for the east, Atlanta for the south, and Chicago for the west."

Telling of the preparations for the show here, Alfred Reeves, who has shared the management jointly with Mr. Miles, gives facts and figures that compare with the other national exhibitions. "Handling a motor car show simply adds to the old story of perfect organization, made a bit more difficult by the fact that plans for these affairs are somewhat of a temporary sort, hastily devised and carried out by men trained quickly for their work."



ATLANTA NATIONAL SHOW—PIERCE-ARROW EXHIBIT OF SIX-CYLINDER CARS



ATLANTA NATIONAL SHOW—THREE 1910 STODDARD TYPES

Mechanical Side of Show

ATLANTA, GA., Nov. 8—The roots of the future are ever found in the present, and as the annual show circuit opens it affords an opportunity of vaguely guessing at what the next 5 years may offer in the line of car design and construction as well as affording the "I told you so" element a chance of vindicating its predictions of a year ago. Briefly, the 1910 crop of new models, or new series, as the makers desire to label them, are not nearly so radical as many of the more conservative expected. The wild-fire rumors of multitudinous productions, individual outputs estimated in the tens of thousands, the coming hosts of new cars to be built in 10,000 lots, and a half score of like 1910 plans have, so far as the 180 cars on exhibition in the Auditorium here are concerned, had little effect on altering the designs of the present year.

There is not one case of a maker who exhibited a year ago having made such startling alterations that an introduction to the 1910 series is necessary. In some cases a new type of motor has been fitted with the transmission system left unaltered; in others the motor has not been disturbed but an improved new axle added; and again in not a few the lubrication of the motor has been changed or a new carbureter added.

Little Departure from Conventional

There is very little of the upsetting of old lines and the launching of something entirely new as was so common two seasons ago. At that time it was imperative for many makers to turn completely about in order to remain in the market, the trouble with not a few of them being that up to that time the cars were conceptions of one individual who refused to change until necessary sales knocked sufficiently loudly at the door. But those days of imperative action are largely over, at least for the present. For a couple of seasons the crops or harvests of radicalism have been ruthlessly swept aside and now a wave of conventionalism appears and is near the crest. A maker two or three seasons ago deemed it necessary to have something different from the other maker in order to sell; but today it does not cause even a semblance of a blush to come over the face of any designer or sales manager to say: "We have not tried to make anything freakish, but to take what other makers have proven reliable and to try improving on what they have accomplished."

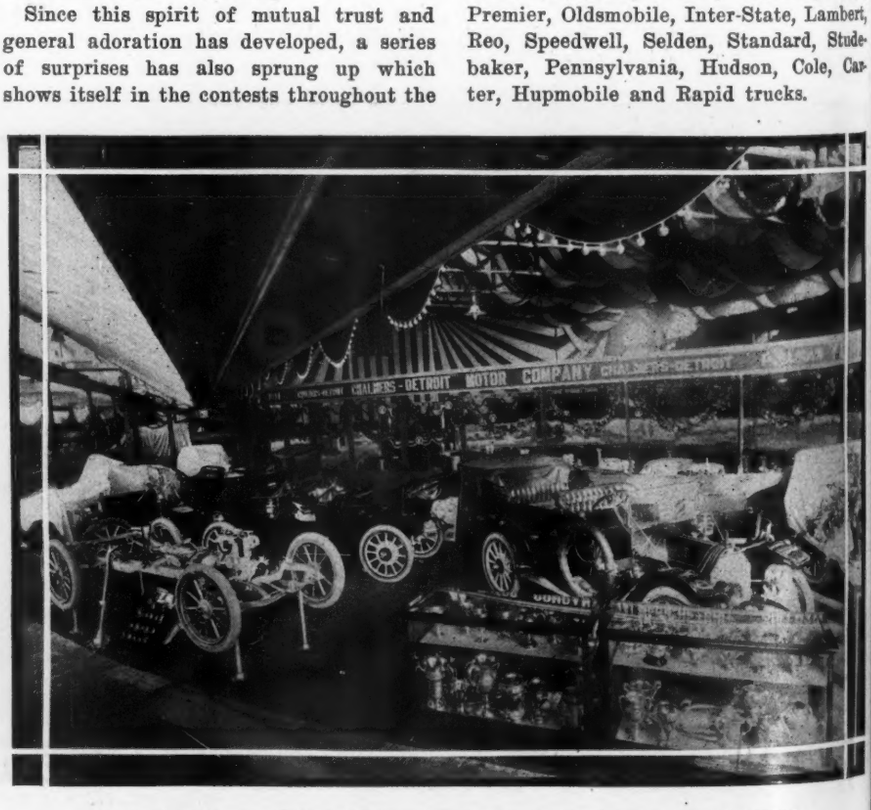
This is a good indication, for it shows a sufficient spirit of confidence of one maker in another to acknowledge that the next town factory also can build cars.

Conventionalism a Blessing

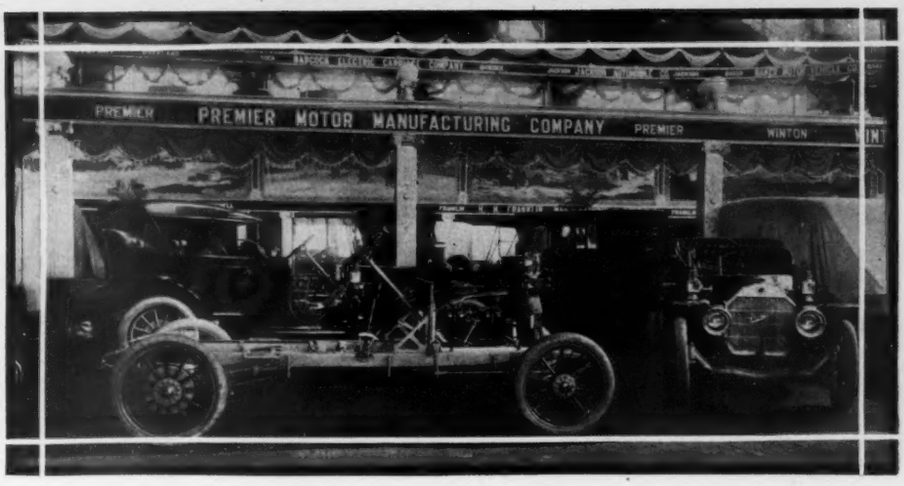
Since this spirit of mutual trust and general adoration has developed, a series of surprises has also sprung up which shows itself in the contests throughout the country. It used to be that no car could win an event unless it had been put through the usual courses of 2 or 3 years' experiences with regular breakdowns. Today this is changed, thanks to the adoption of conventionalism by makers, and now a car which has scarcely competed in previous events can go out and win on sheer merit. This condition has established a feeling of confidence in the public for the car in general which to no small extent aids in explaining the phenomenal demand of this year and the ease with which new makes of cars can be brought out and sold in thousand lots the first year.

Resume of Tendencies

In a brief general resume of the motor car tendencies as revealed at Saturday's opening of the show it is well to bear in mind that conclusions drawn from this show can be considered fairly correct, because although all of the old time makers are not on the hand, the majority are. There are 153 motor cars on exhibition, with three or four exhibits not as yet installed. Besides this number of cars with varied types of bodies, two dozen polished chassis are in place. Not so many chassis are shown as will be on hand at Chicago and New York, such firms as Packard, Pierce, Peerless, Stevens-Duryea and Mitchell not exhibiting here, although they have conscientiously displayed them at other national shows. On the other hand, Locomobile shows a highly-finished chassis of the shaft-drive model, obtaining a beautiful effect by the happy combination of polished and painted parts and others finished in brass. Other spaces showing chassis are Stearns, Chalmers, Marmon, Winton, Elmore, White, Rambler, Mora, Premier, Oldsmobile, Inter-State, Lambert, Reo, Speedwell, Selden, Standard, Studebaker, Pennsylvania, Hudson, Cole, Carter, Hupmobile and Rapid trucks.



ATLANTA NATIONAL SHOW—CHALMERS THIRTIES AND FORTIES AND TROPHIES



ATLANTA NATIONAL SHOW—PREMIER CHASSIS AND CARS

Atlanta Gives Line on '10

The percentages of bodies favor the present type of five-passenger touring car, but the number of toy or miniature tonneau is as great now as the roadster type was 2 years ago. The three-passenger roadster or speed car is not much in evidence, there being not a dozen of them on hand, this suggesting a slight shattering of public favor in the uncomfortable rumble seat. On the other hand the toy tonneau has progressed and the close-coupled body is increasing in favor. In visiting the many booths it is difficult to name the different types of bodies to suit the several salesmen. In some cases a certain design is designated a close-coupled in one stand and a toy tonneau in the next space; whereas a close analysis shows the tonneau accommodation in each to be two and the rear seats' relation to the rear axle is identical in each. A type of body that is gaining in favor is the four-passenger surrey, this being but a tonneau without doors and with lower back and sides. This makes a light type of car and with good seating space. Tops are generally shown, more than heretofore, and windshields are a standard part of the equipment more than heretofore. Not a few makers are adding their own type of windshield and others have arranged with a windshield maker to build a special type for them best suited to the car's design. The equipment story might be carried on into the lamp, horn and gas tank realm, all of which are now stock on many cars which heretofore charged extra for them. The double gas headlights are being added in many cases. Stearns is attracting attention because it fits as stock Continental demountable rims, this marking a new epoch in equipment, although some cars, notably the Knox, have been equipping Fisk demountables this year as stock. Shock absorbers are being equipped on many of the highest-priced machines, and one maker, Winton, has added an absorber of home design and make. This action suggests a new angle in the line of equipment.

Analysis of the Chassis

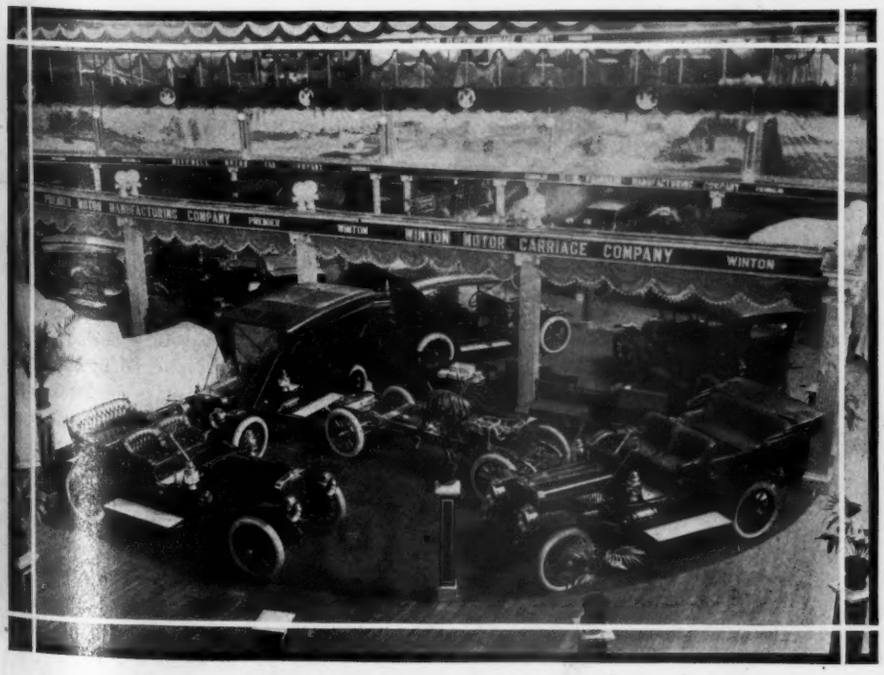
In analyzing the chassis the running gears naturally present themselves first. For next year frames are invariably heavier, by this is meant that the channel steel side members are made with a greater vertical depth, the channel lips are wider and not infrequently the stock is 1-32 heavier. A commendable change is the increase in the size of gusset plates at the angle where cross pieces unite with the side members of the frame. These gusset braces are generally stamped integrally with the cross piece and are large, offering as they do real and not imaginary strength.

The dropped frame is now general. Four years ago when Peerless showed this type of frame little imitation was indulged in, but last year it got good assistance and this year has witnessed a veritable landslide to it; so great, in fact, that now the cheapest-priced model has it and any new car must perforce adopt it. The drop invariably is in advance of the rear axle and varies from 2 to 3 inches. Chalmers and the Stearns 15-30 have adopted the double drop, the Stearns having brought out this with the advent of the small car a year ago.

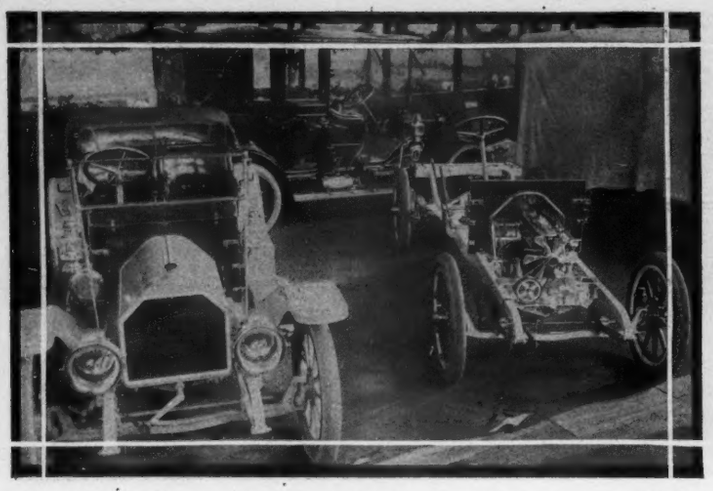
Hand in hand with the drop frame is the three-quarter elliptic rear spring. This type is taking the place of the semi-elliptic type in the rear, but it is very noticeable that those makers who have used the platform types for several years are slow in changing, so that the prestige of the platform is equally as strong as it was a year ago. Peerless, Stevens-Duryea on six-cylinder model, Mitchell on its six model, Mora, Ohio, Standard, Studebaker-Garford and the National six are a few of the examples of the platform spring. Compared with these, however, is a long line of three-quarter devotees, including Pierce, Stoddard, Oldsmobile, Premier, Reo four, Inter-State, Pennsylvania, Hudson, Stearns, Elmore, Chalmers, National four, Matheson, Overland, Falcar, Mitchell fours, Maxwell model E and Stevens-Duryea XX.

Changes in Spring Design

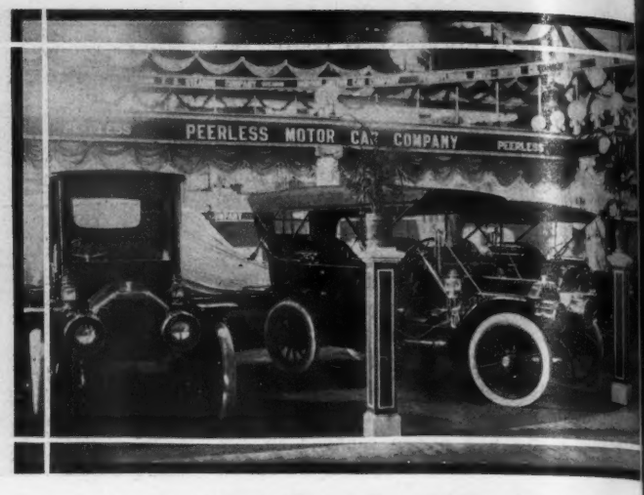
The Oldsmobile has changed from full elliptic to the three-quarter, Stoddard has changed from the semi-elliptic and the majority of the three-quarter converts are from the semi-elliptic class. Jacksons continue to use full elliptics in front and rear, as does the Franklin company; and Maxwell, Cole, Lambert, Black Crow, Marion, Reo two-cylinder types, Marmon, Overlands and E-M-F are examples of the full elliptic type. On the Ford the transverse spring in front and rear is continued. The Ramblers are fitted with triple action springs in the rear; and the Brush run-



ATLANTA NATIONAL SHOW—GROUP OF WINTON SIXES AND CHASSIS



ATLANTA NATIONAL SHOW— THE STEARNS 15-30 CHASSIS AND CAR



ATLANTA NATIONAL SHOW—FOUR-CYLINDER PEERLESS CARS

about uses the four vertical coil springs—one at each corner—acting as they do in conjunction with shock absorbers.

The Oldsmobile Limited sets the pace for big wheels, this six-cylinder car carrying 42 by 4½-inch tires in front and rear. Next to them comes the Pierce six-60 with 37 by 5-inch tires in front and 38 by 5½-inch sixes in rear. On the six-48 Pierce 37 by 5-inch sizes are used in rear, with the standard 36-inch in front. These constitute the only examples of big tires, but there are scores of examples of other machines, that have promoted from the 32 to the 34-inch class; and others advancing from the 34-inch ranks to the 36 class. This has been a year of large tires and next year gives promise of eclipsing it.

Few Changes in Motors

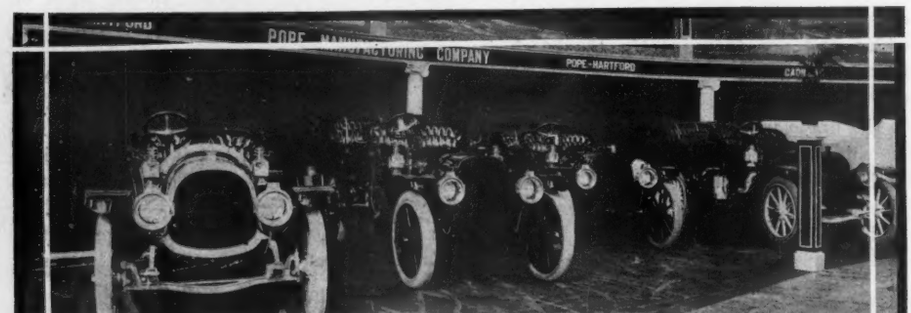
The motor situation is changing very slowly. In the $2,000 to $3,000 class there has been not a little increasing in the bore and lengthening the stroke. It is questionable what has prompted this, and it may be that the present classifications of cars for contests by cylinder volume as decided on by the Manufacturers' Contest Association has had not a little to do with this. At least it may be designated a coincidence that so many of the new sizes come closer to this classification limit, but few if any cases are on record where the increase of motor size has promoted the car to a higher class.

The long stroke is gaining in favor. The new White gasoline car has set the pace in this respect with its bore of 3¾ inches and a 5½-inch stroke. This is in direct accord with European dictates at the present time. Not a few other makers have altered their motors to bring them into the long-stroke category. One example is the Premier, in which the stroke has jumped from 4½ to 5¼ inches, with the bore remaining at 4½ inches. In a rather graphic way this has resulted in giving a car which with the longer stroke gives as good service on a four-to-one gear ratio as it used to give on a three and one-half to one. The stroke in the Stoddard-Dayton cars have been lengthened.

One of the most pronounced motor trends is that towards forming four cylinders in one casting—en bloc as the Frenchman calls it. Ford led off with this construction, but now there are seven makers showing such and a total of twenty-two cars on exhibition fitted with them. These include in addition to the Ford such names as Chalmers Thirty, Stearns 15-30, White, Hudson, Lambert and Black Crow. All motors of this design bear a striking similarity to one another, because of the lack of intake, exhaust and water piping. All of them are of the L type, having both sets of valves on one side, excepting the Chalmers, which has the intakes located in the cylinder heads and opened by a rocker arm action. The new White encloses both the intake and exhaust manifolds, so that only a single pipe connects from the muffler to the cylinders and but one exhaust pipe is seen. Nearly all of these motors use forced water circulation.

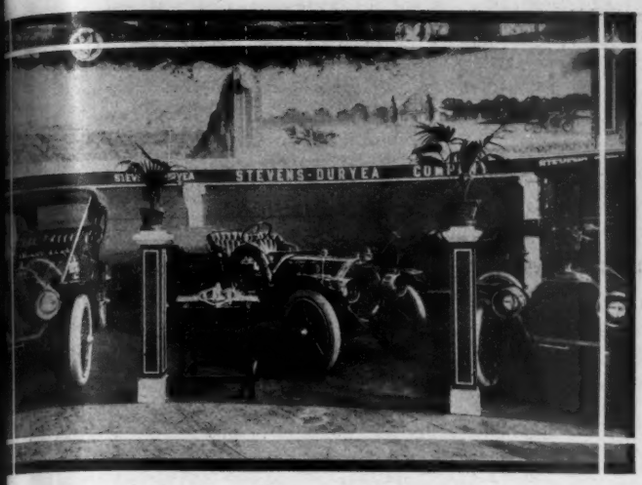
Six-Cylinder Engines

Next to the en bloc comes the six-cylinder type. It cannot be argued that the six is losing ground, although its progress is very slow. It has some new supporters this year, although a few of its old-time

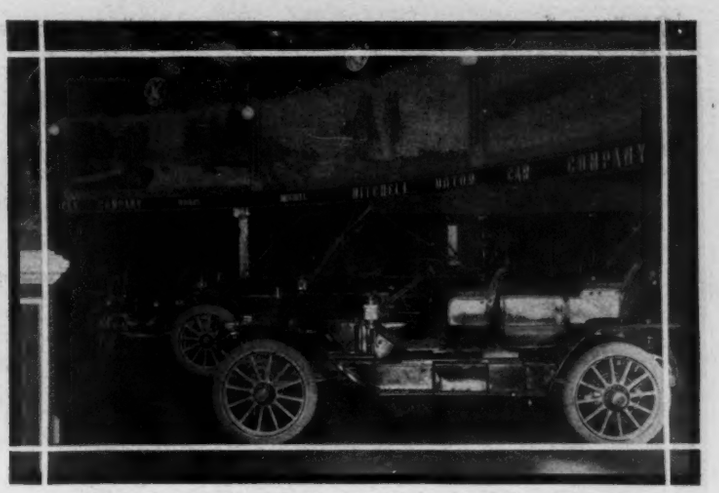


ATLANTA NATIONAL SHOW—POPE-HARTFORD IN VARIOUS TYPES

ATLANTA NATIONAL SHOW—ONE, TWO AND FOUR-CYLINDER REOS



ATLANTA NATIONAL SHOW— STEVENS-DURYEA SIXES AND FOURS



ATLANTA NATIONAL SHOW—THREE 1910 MITCHELL MODELS

exponents are not exhibiting their sixes. The Mitchell is a new one, so is the Knox, and to these can be added the Standard. Pierce remains in the six-cylinder field, building nothing else; Winton is in the same boat with two six types; Stevens-Duryea, one of the six pioneers, shows two sixes, one being Model AA with 4¼ by 4¾-inch cylinders. Franklin continues its six-cylinder model, as do Oldsmobile, Premier, Matheson, National and Pennsylvania. All told, there are twenty-four six-cylinder models on exhibition, representing thirteen different factories.

There have been very few additions to the valve-in-the-head army of builders during the past year. The new Standard six is one example, however, and to this might be added the Mora twenty. The new four-cylinder Reo, with intake valves in the head and exhaust valves in offset ports, must not be overlooked. The valve-in-the-head ranks now include such names as Pope-Hartford, Stoddard-Dayton, Franklin, Chalmers thirty, Mitchell, Pennsylvania, Matheson, Great Western, Moon, Jackson and Knox, the last mentioned not having its exhibit installed for opening night. Of this number but one, the Moon, uses the one rocker arm for the intake and exhaust valve of each cylinder. The Stoddard used to do this, but now has a rocker arm for each intake and also for each exhaust valve. The Moon and Jacksons are examples of carrying the camshaft over the cylinder heads, all of the others locating this shaft within the crankcase.

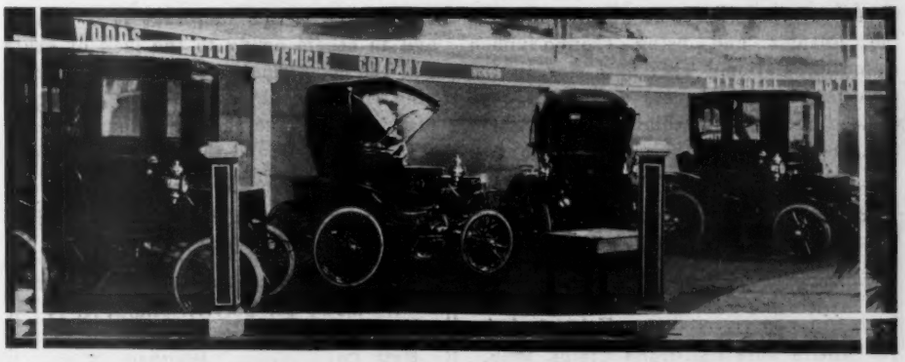
Problem of Unit Construction

Closely associated with motor design comes the problem of unit construction—by this being meant either locating the motor and gearbox together as one or the gearbox and rear axle. Many builders have concluded that it is best to have but two units in the power and transmission systems, so that but one universal joint is needed.

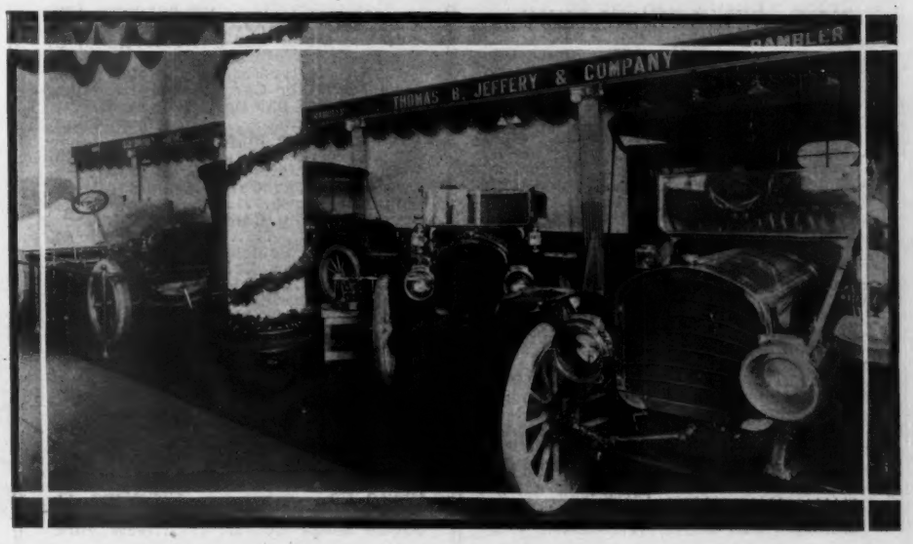
The Stevens-Duryea and Maxwells have been originators in this construction as well as in three-point support. One class, which either bolts to the gearbox to the back of the crankcase or casts it integrally with it, includes Stevens-Duryea, Maxwell, Chalmers thirty, Ford, Cole and Jackson. The other class forms the gearbox as a unit with the rear axle. The father of this community is the Packard and in these ranks are Matheson six, Stearns 15-30, Mora 20, Pennsylvania, Marmon, E-M-F, Marion, Rambler, Glide, Mitchell and Inter-State. From this enumeration it must not be inferred that all of these makers locate the gearbox back on the rear axle, rather that it is mounted amidship but is made a unit with the axle in that a torsion tube connects the gearbox with the differential housing, making the gearbox and axle to all intents and purposes a unit, although separated the length of the torsion tube. Exponents of this construction are Rambler, Mitchell, Inter-State and Overland. The Mitchell is a 1910 convert to this division. A careful count shows that there are fifty-eight cars on stands employing unit construction of either of these types.

Cooling of the Motor

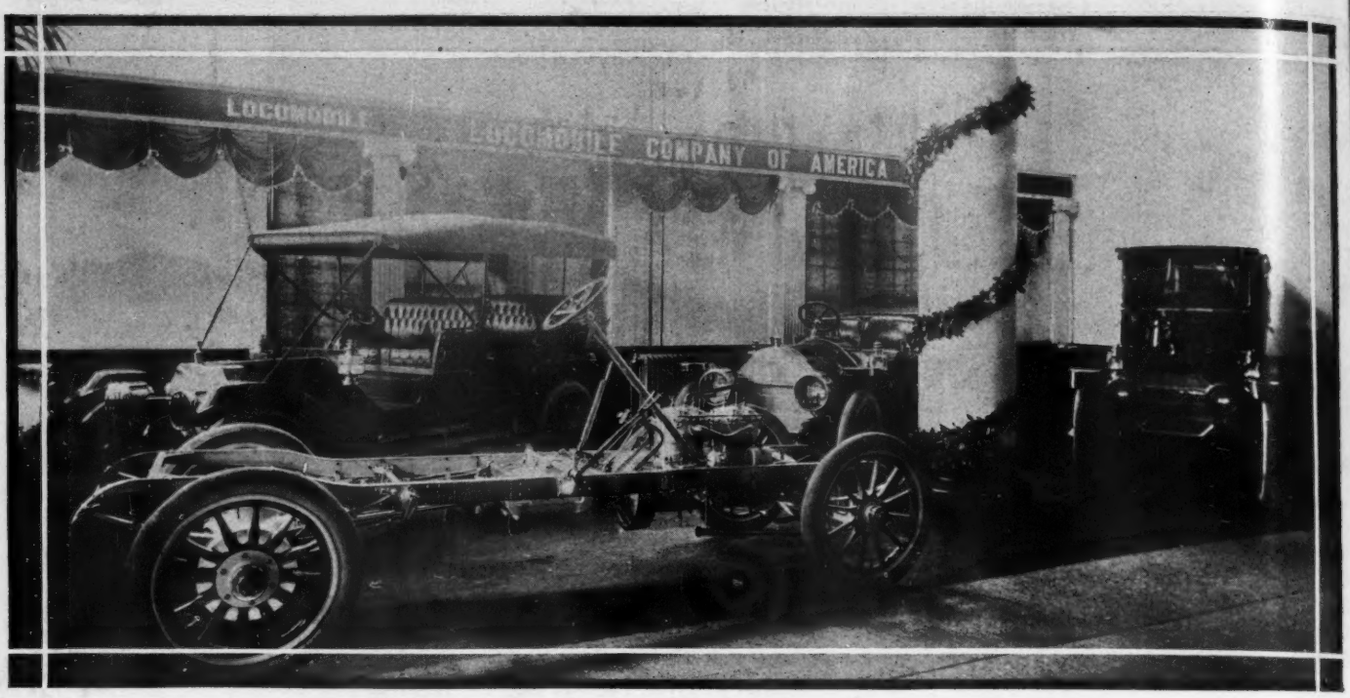
Thermo-syphon cooling of the motor has not progressed as many enthusiasts had



ATLANTA NATIONAL SHOW— WOODS 1910 ELECTRICS



ATLANTA NATIONAL SHOW—THREE RAMBLER TYPES FOR NEXT YEAR



ATLANTA NATIONAL SHOW—LOCOMOBILE CHASSIS AND SHAFT AND CHAIN-DRIVEN MODELS

reason to expect that it would. It is appropriate that at the first national show in the south the father of thermo-syphon cooling should be on hand, namely a Renault. It is also interesting to see shown for practically the first time the 20-horsepower Mora, which is a low-priced runabout carrying the same general lines as the Renault and using thermo-syphon water circulation. This new star in the motoring firmament uses a Renault type of hood and has the radiator located where the dash ordinarily is placed. The two and four-cylinder Maxwell cars all remain firm with thermo-syphoning, as do the Overlands, the Jackson, Molines and one model of Cartercar.

In the field of positive circulation by either a gear or centrifugal pump the latter is claiming more and more attention at the hands of the makers. In some cases this is due to the fact that it is quieter and in others owing to the lack of gears and the consequent avoiding of and stripping of gears. It is becoming more general to gear-drive the fans mounted back of the radiators and those still using belts are invariably adding some scheme for adjusting the tension of the belt. Some of these methods are by eccentric bushings and others by spring constantly under tension.

Many Magnetos Fitted

The magneto equipment may now be considered practically general, even the $800 car not being complete without it. The dual ignition system is gaining rapidly in popularity, by dual being meant that system with one set of plugs and two current sources, a magneto for general use and a dry or storage cell for starting and emergency purposes. This system is simpler than the complete double outfits. In coils a growing change is the use of the master vibrator for two, three, four and six-cylinder uses. With the master vibrator but one vibrator is needed for two, three, four, six or any number of cylinders. In a four-unit coil this master vibrator is contained on an extra unit, so that five units are actually needed for a four-cylinder motor. In a six-cylinder type seven units are needed. With the master vibrator there is actual synchronism in all of the cylinders and there is only one vibrator to keep in adjustment. The K-W company has had one of these types of coils on the market for several years; Splitdorf added one last year and Autocoil and Conneticut have joined the ranks for next year. A novelty in conjunction with the Connecticut is that the master unit is a double one with a vibrator on each end. Only one vibrator operates at once, but should one become disabled it is only necessary to pull the unit out and insert the other end, when an entirely different coil and vibrator are brought into use.

Make-and-Break Ignition

The ranks of make-and-break ignition have not suffered a change for the better or worse during the year. Locomobile and

EXHIBITORS OF MOTOR CARS AT THE ATLANTA SHOW

Apperson Brothers Auto Co.....Kokomo, Ind.
Autocar Co.....Ardmore, Pa.
Austin Auto Co..Grand Rapids, Mich.
Brush Runabout Co.....Detroit, Mich.
Buckeye Mfg. Co.....Anderson, Ind.
Bartholomew Co.....Peoria, Ill.
Babcock Electric Carriage Co.....Buffalo, N. Y.
Baker Motor Vehicle Co.....Cleveland, Ohio
Black Mfg. Co.....Chicago
Cadillac Motor Car Co..Detroit, Mich.
Cartercar Co.....Pontiac, Mich.
Chalmers-Detroit Motor Co.....Detroit, Mich.
Columbus Buggy Co.....Columbus, O.
Dayton Motor Car Co.....Dayton, O.
Elmore Mfg. Co.....Clyde, O.
Fal Motor Co.....Chicago
Ford Motor Co.....Detroit, Mich.
Franklin Mfg. Co., H. H.....Syracuse, N. Y.
Great Western Auto Co....Peru, Ind.
Hudson Motor Car Co..Detroit, Mich.
Hupp Motor Car Co.....Detroit, Mich.
Inter-State Auto Co.....Muncie, Ind.
Jewel Carriage Co.....Cincinnati, O.
Jackson Auto Co.....Jackson, Mich.
Thomas B. Jeffery & Co.....Kenosha, Wis.
Knox Automobile Co. Springfield. Mass.
Locomobile Co. of America.....Bridgeport, Conn.
Matheson Auto Co..Wilkes-Barre, Pa.
Mitchell Motor Car Co....Racine, Wis.
Maxwell-Briscoe Motor Co.....Tarrytown, N. Y.
Moon Motor Car Co.....St. Louis, Mo.
McIntyre Co., W. H.....Auburn, Ind.
Mora Motor Car Co.....Newark, N. Y.
Marion Motor Car Co.Indianapolis, Ind.
Moline Automobile Co..East Moline, Ill.
Metz Co.....Waltham, Mass.
Nordyke & Marmon Co.....Indianapolis, Ind.
National Motor Vehicle Co.....Indianapolis, Ind.
Olds Motor Works.....Lansing, Mich.
Peerless Motor Car Co...Cleveland, O.
Pierce-Arrow Motor Car Co.....Buffalo, N. Y.
Packard Motor Car Co..Detroit, Mich.
Petrel Motor Car Co..Milwaukee, Wis.
Pope Mfg. Co.....Hartford, Conn.
Premier Motor Mfg. Co.....Indianapolis, Ind.
Penn. Auto-Motor Co..Bryn Mawr, Pa.
Reo Motor Car Co.....Lansing, Mich.
Renault Freres.....New York
Rauch & Lang. Carriage Co.....Cleveland, O.
Rapid Motor Vehicle Co.Pontiac, Mich.
Stevens-Duryea Co.....Chicopee Falls, Mass.
St. Louis Car Co.....St. Louis, Mo.
Selden Motor Vehicle Co.....Rochester, N. Y.
Studebaker Auto Co.....New York
Speedwell Motor Car Co...Dayton, O.
Stearns Co., F. B.....Cleveland, O.
Streator Motor Car Co...Streator, Ill.
Waverley Co.....Indianapolis, Ind.
Winton Motor Carriage Co.....Cleveland, O.
Woods Motor Vehicle Co ....Chicago
Willys-Overland Co.....Toledo, O.
White Co.....Cleveland, O.
York Motor Car Co.....York, Pa.
Sultan Motor Co.....New York

Premier are the two exponents of this class, although in the Studebaker-Garford the make-and-break spark is created in the magnetic spark plug. This will be the second season for this plug on the Studebaker-Garford. On the Locomobile the make-and-break mechanisms remain on the valve chambers with advance and retard of spark are by a spiral cam. The Premier system is characterized by the cushioned mechanism which works for a quicker spark.

The Franklin is one example of the single ignition system, these motors having the magneto only, and no storage or battery of dry cells for starting purposes. The Ford flywheel magneto is still in use. A few examples of special systems are the Atwater Kent fitted on the Elmore and other cars and the Delco system, shown on the Stoddard and Cadillac cars. The Delco, generally speaking, resembles the master vibrator outfit in that for a four-cylinder motor there are four non-vibrating coils with a master vibrator electro-magnetically operated. On both the Stoddard and Cadillac the coils with vibrator parts are carried on one of the cylinder castings.

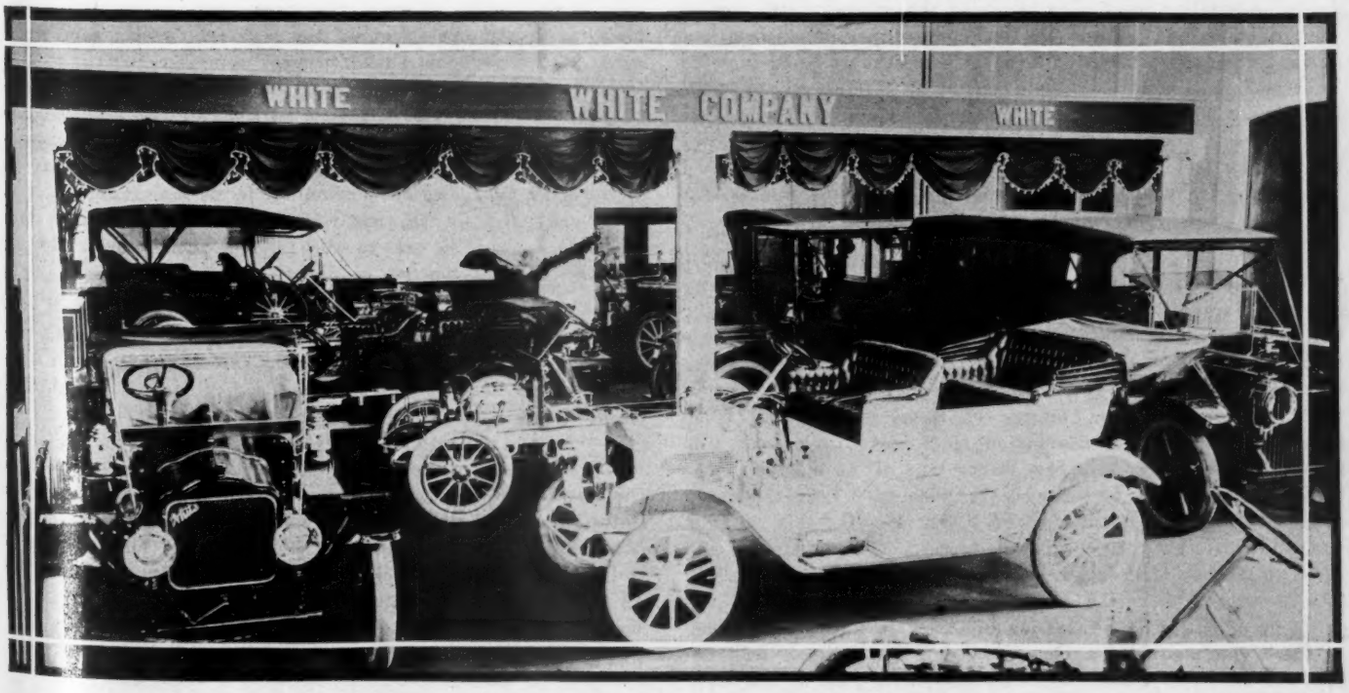
Automatic Carbureter Popular

Carburation for next year is much where it was this year. The automatic carbureter is very general; by automatic is meant the fitting of some kind of auxiliary air valve whereby the suction of the motor automatically retains a uniform, or nearly so, vacuum around the spraying nozzle. In the Schebler and Stromberg spring-controlled auxiliary air valves perform this function; in the Kingston, Planhard and others ball valves are looked to to give these results. The waterjacketing of the mixing chamber has come in for general adoption. Many of the cars fix their own makes of carbureters, notable in this class being Pierce, Peerless, Packard, Pope-Hartford, Locomobile, Studebaker-Garford, Franklin, Stearns, Reo and others. Pressure feed of gasoline to the carbureter has gained in a few instances, all of the Stoddard models now carrying the gasoline tank under the rear of the chassis. Nearly every high-priced car and many of the cheaper models now have fuel tanks designed to contain a reserve supply of 3 or 5 gallons, which can only be drawn upon by turning a special valve. This is commendable and prevents being stalled in out of the way places without fuel.

(Continued on Page 17)

EXHIBITORS OF MOTOR ACCESSORIES AND MOTOR CYCLES

Badger Brass Mfg. Co..Kenosha, Wis.
Conn. Tele. and Electric Co.....Meriden, Conn.
Electric Storage Battery Co.....Philadelphia, Pa.
Fisk Rubber Co..Chicopee Falls, Mass.
Goodrich Co., B. F.....Akron, O.
Harris Oil Co., A. W.Providence, R. I.
Jones Speedometer Co.....New York
Merger, C. A.....New York
N. Y. and N. J. Lubricant Co....New York
Veeder Mfg. Co.....Hartford, Conn.
Weed Chain Tire Grip Co...New York Mezzanine Floor.
Ajax-Grieb Rubber Co..Trenton, N. J.
Diamond Rubber Co.....Akron, O.
Dixon Crucible Co., Jos.....Jersey City, N. J.
Empire Tire Co.....Trenton, N. J.
Federal Rubber Co.....Trenton, N. J.
Firestone Tire and Rubber Co....Akron, O.
G & J Tire Co.....Indianapolis, Ind.
Goodyear Tire and Rubber Co.....Akron, O.
Gabriel Horn Mfg. Co...Cleveland, O.
Hartford Suspension Co.....Jersey City, N. J.
Hartford Rubber Works Co.....Hartford, Conn.
Morgan & Wright.....Detroit, Mich.
Michelin Tire Co.....Milltown, N. J.
National Carbon Co.....Cleveland, O.
Oliver Mfg. Co.....Chicago
Republic Rubber Co...Youngstown, O.
Splitdorf Co., C. F.....New York Second Floor.
Adam Cook's Sons.....New York
Ajax Trunk and Sample Case Co..New York
S. F. Bowser & Co..Fort Wayne, Ind.
Cloud & Stanford.....Atlanta, Ga.
William Cramp.....Philadelphia, Pa.
Columbia Lubricant Co.....New York
Herz & Co.....New York
High Wheel Auto Parts Co.....Muncie, Ind.
Leather Tire Goods Co.....Niagara Falls, N. Y.
Lavalette & Co.....New York
C. E. Miller.....New York
Never-Miss Spark Plug Co.....Lansing, Mich.
Post & Lester.....Hartford, Conn.
Randall-Faichney Co....Boston, Mass.
Rutherford Rubber Co.....Rutherford, N. J.
Streno Horn Co.....New York
Sprague Umbrella Co.....Norwalk, O.
C. A. Shaler Co.....Waupun, Wis.
Stromberg Motor Devices Co..Chicago
Warner Instrument Co....Beloit, Wis.
Wheeler & Schebler..Indianapolis, Ind.
Acorn Motor Car Co.....
Arrowood Co., Milton.....Atlanta, Ga.
Aurora Automatic Machinery Co..Chicago
Carter-Crume Co.....
Chicago Wind Shield Co.....Chicago
Consolidated Mfg. Co,.....Toledo, O.
Excelsior Supply Co.....Chicago
J. L. Gibney & Brother.....Philadelphia, Pa.
Greyhound Motor Works.....Buffalo, N. Y.
Grossman & Co., Emil.....New York
Harley & Davidson...Milwaukee, Wis.
Havoline Oil Co.....New York
Hendee Mfg. Co.....Springfield, Mass.
Henderson Motor Sales Co.....Indianapolis, Ind.
Lutz Lockwood Co.....New York
Newark Rivet Works...Newark, N. J.
N. S. U. Motor Co.....New York
Pfanstiehl Electrical Laboratory..North Chicago, Ill.
Poison, W. F.....Buffalo, N. Y.
Randolph Motor Car Co.....Chicago
Remy Electric Co.....Anderson, Ind.
Shipman Instrument Co..Sunbury, Pa.
Standard Auto Supply Co.....Chicago
Universal Tire Protector Co.....Angola, Ind.
Vehicle Apron and Hood Co.....Columbus, O.
Vehicle Top and Supply Co.....St. Louis, Mo.
Werner Pole Co.....Cincinnati, O.



ATLANTA NATIONAL SHOW—EXHIBIT OF WHITE GASOLINE AND STEAM CARS

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The Great Trends of the Motor Industry

THE motor car industry is following fairly clearly defined channels of progress at the present time. A few of those channels may but vaguely be defined, but they exist nevertheless. Although it may be impossible to state that a certain type of cylinder casting is bound to attain supremacy, yet it is not impossible to assert that in nearly every motor additional power can be obtained without increasing the bore and stroke or adding a pair of extra cylinders. It used to be a brute strength rule in the motor car realm. If more power were needed, a couple more cylinders were added or the bore of the present cylinders increased half an inch. This regime has ceased with at least 75 per cent of makers, but a few of the class remain. Next year's models will in not a few cases be as much as 10 per cent faster than this year's product and yet in a dozen cases the size of the cylinders has not been altered. Whence, then, comes this power increase? This question is the real meat of the cocoanut and calls for a very broad answering, but in which answer similar questions with relation to other parts of the car may be answered.

NOT a few cars have increased the power by simply changing the setting of the intake valves which has been done by a new style of cam on the camshaft. In some cases this apparently very trivial change has added more than 5 miles an hour to the average speeding pace of the car. Instead of changing the contour of the cam another maker has changed the size of his exhaust valves and perhaps intake valves, with the hope of getting more mixture in and liberating the exhaust gases quicker. Others have added more power by overlapping the intake and exhaust valves of each cylinder so that for a time at the end of the exhaust stroke and before the real suction stroke begins both intake and exhaust valves are open simultaneously. This might appear a peculiar practice to many, on the ground that a portion of the incoming mixture has an opportunity of passing out through the exhaust ports or a part of the exhaust being injected into the intake manifold. As a matter of fact neither happens. It must not be forgotten that although gases are most responsive to changes in speed of flow, changing from a higher to a lower compression and vice versa. It takes some time to do this, and this time element, although very short, is one of the factors that makes the overlapping of valves possible.

TO the skeptic this may appear incongruous, but that illustrious personage must remember that everything takes place rapidly within the cylinder of a high-speed engine and what may appear a small factor to the world outside of that cylinder where movements and changes are proportionately slower, yet within that cylinder speed is king. On a motor revolving 2,000 revolutions per minute the piston must come to a dead stop 4,000 times each minute. This means that piston must do 8,000 things in these short 60 seconds. It must start 4,000 times and it must stop the same number of times. Besides this, it must make no fewer than 4,000 separate trips, 2,000 down strokes and 2,000 up strokes, if it is a vertical type of motor. This analysis is sufficient to show the atmosphere of operations within the cylinders and it is only these makers who are taking cognizance of these and many other changes within the cylinder who are able to add to the power of their machine other than by the brute force method.

BUT while the attention to unseen things—if they may be labeled such—produce big results on the horsepower-testing dynamometer, this is only one that applies to the motor, and its analysis has only been touched upon. More power undoubtedly comes from more motors because of improved lubricating facilities. The old-time systems of lubrication where one cylinder was flooding and another starving is no more with the legitimate maker. Although the oiling problem is far from settled, it is at present an undisputed fact that motors have added from 15 to 20 per cent general running efficiency by the fitting of a lubricating system that gives a supply of oil proportionate to the motor's demands and the work to be performed. Improvements in the cooling systems, such as have been taking place in a score of factories during the last couple of years have added horsepower other than by the brute force plan. More solid crankshafts, more crankshaft bearing surface, more rigid crankcases and more supports and improved suspensions of the motor on the frame all have done their part in this good work.

AMERICA can regard the two new speedways—the one at Indianapolis and the other at Atlanta—as a distinct step forward in the refining of track racing and making it more of a sporting character than it has been in the past when promoters have been forced to use 1-mile circular tracks which were built solely for horse-racing and upon which contests are more or less a travesty on the sport because of the dangers that dog the footsteps of the daring drivers who risk their necks chasing around the ovals. It has been because of this danger that road racing has become the more popular of the two branches of competition; but now, since it has been demonstrated that racing on specially-built motor tracks, well-banked and of the proper size, is comparatively safe, the track game ought to vie with road racing for the favor of the public. Two days of racing at Atlanta have done much for track competition. Great speed has been made not only by racing machines, but by stock chassis as well. True, no pace approaching some of the terrific flights reported from England's Brooklands track has been made so far, but then it must be remembered that this country has not as yet had a chance to get on familiar terms with these big ovals. Brooklands did not set the world afire when it first opened; therefore it would be best to wait another year before comparing the speedways of the two countries.

INDICATIONS point to similar speedways in other American cities and now that both Indianapolis and Atlanta have demonstrated that such tracks are a paying investment from the box office point of view it is more than probable that Detroit and Cleveland will follow suit—the former most likely. It is needless to review the good such tracks will do the industry. The tradesmen well know that with several of these big tracks scattered around the country it will pull many of the testing cars off the road and in this manner do a lot of good in pacifying the public which finds fault with the way the speed laws are frequently violated by testers who often are compelled to open the throttle a little wider than the law allows in order that their work may be well done. Then again these speedways will give the manufacturers a chance to try out new models in a manner which is denied them on the public roads.

KANSAS CITY DRIVES A MOTORING FEATURE

Boulevard System of Missouri City Unequaled—Washington Gets $1,000,000 for Roads

KANSAS CITY, Mo., Nov. 6—When a motorist from Denver, or Mansfield, O., or Lexington, Ky., or some other far-away place, drives into Kansas City and stops in front of the Baltimore hotel, tired and dusty after the long day's ride, the obsequious door man runs out, takes the lighter hand baggage, starts for the hotel, hesitates a moment and then says:

"Pardon, sir, do you wish to go in now or would you prefer to take a ride over the boulevard system first? You know there are 267 miles of boulevards and rock roads in Kansas City and Jackson county, and visitors will be well repaid by riding over at least a part of the system. The Cliff drive——"

If the visitor pays no heed to the stream of eloquence, but passes on into the hotel and puts his name on the register, the clerk, as he rubs the first two fingers of his right hand delicately and artistically over the blotter, says, with an ingratiating smile:

"Pardon, sir, do you wish to go to your room now or would you prefer to take a ride over the boulevard system first? You know there are 267 miles of boulevards and rock roads in Kansas City and Jackson county, and we recommend to visitors that they ride over at least a part of these fine roads. The Cliff drive is especially attractive and you——"

As the visitor turns to flee from this attack he is met by a dapper, smiling gentleman dressed in a cap and other evidence of motoritis. The dapper gentleman is the Kansas City agent and western distributor of the car the visitor is driving. Extending his hand, he says:

"Pardon me, sir, my name is Bliffkins and I represent the Kansas City branch of the Bangup car. I see you are from Kentucky, and as you are doubtless a stranger in Kansas City I take the liberty of suggesting that you go for a short ride with me over the splendid boulevard system we have here. There are 267 miles of boulevard and rock roads in Kansas City and Jackson county, and you cannot find their equal anywhere. The Cliff drive is the most picturesque——"

There is no escape. It is useless to appeal to the fat policeman, for he would only smile pityingly and say:

"There are 267 miles of boulevard and——"

Driven to desperation the visiting motorist accepts the invitation and soon is being whirled away over the 267 miles—or at least a part of it. The Cliff drive is circumnavigated twice in order to see the beauties on both sides of the roadway, and when the Kentuckian is deposited at the hotel door, he stops at the cigar counter, buys a picture post card and writes to the folks at home:

"Having a fine time. Arrived at 4.30 and took a ride over the boulevard system. It's great. There are 267 miles of boulevard and rock roads in Kansas City and Jackson county and they are the finest ever. Will stay here a week. Write to me at this hotel."

The Kentuckian has it, too. It is in the air and there is no way to avoid it. The Greek bootblack speaks of it when he brushes you off, the girl at the cigar counter tells you about it, and even the ministers refer at times to the wide, smooth roads traversed by pleasure-loving people, not, however, necessarily implying that Kansas City and Jackson county's 267 will lead you to a warmer clime.

To one who has never visited Kansas City this enthusiasm may seem rather extreme, but once the 267 miles is seen the enthusiasm is understood and justified. The boulevard system of Kansas City is unequaled in any other American city. The roads are kept in the pink of condition, and driving over them is a pleasure to be enjoyed to the utmost. The driveways are wide and smooth, but perhaps the most noticeable feature is the absence of dust. Oil has been judiciously sprinkled over the entire system, and the motorist returns from a spin of 2 or 3 hours as clean as when he started. Oil has proven the solution of the dust problem in Kansas City, and the solons of other cities who are wrestling with the dust and other disagreeable features of road-making should visit Kansas City and learn first hand how a road should be treated.

Coming Motor Events

NOVEMBER

3-13—Outdoor show at Salt Lake City, Utah.
6-13—National show at Atlanta, Ga.
9—Opening meet at Atlanta speedway.
14-17—Four-day track meet at San Antonio, Tex.
20—Track meet at New Orleans.
25—Mile-high hill-climb, Redlands, Cal.

DECEMBER

25-Jan. 1—Show at Columbus, O.
28-29—Philadelphia mid-winter reliability run.
31—Opening of Grand Central palace show, New York.

JANUARY

7—Closing of Grand Central palace show, New York.
8-15—Madison Square garden show, New York.
17-24—Philadelphia show.
25-31—Detroit show.

FEBRUARY.

4-6—Mardi Gras Track meet, New Orleans.
5-12—N. A. A. M. show, Chicago Coliseum.
14-21—Show at St. Louis, Mo.
14-18—Annual show at Buffalo.
19-26—Show at Newark, N. J.
28 to March 5—Show at Kansas City.

MARCH

5-12—Boston show.
21-28—Denver Motor Club show.

REAL ROAD WORK IN WEST

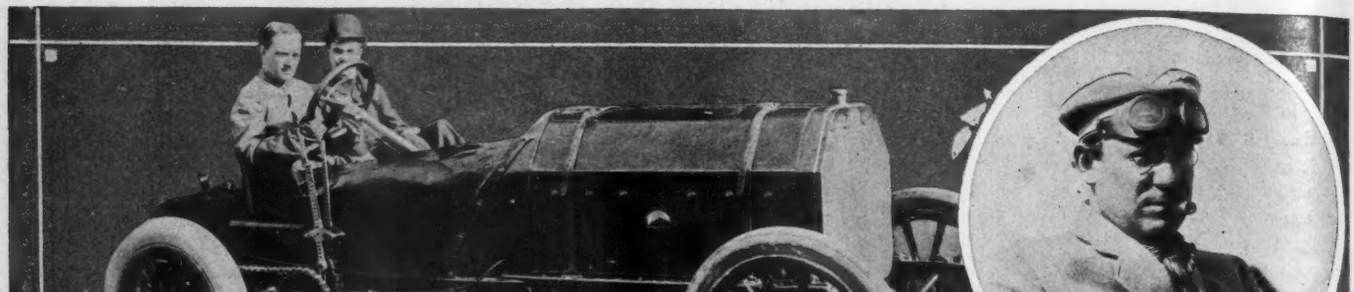
Spokane, Wash., Nov. 6—"One million dollars will be expended on state and state-aid roads in eastern Washington as early as possible next spring, and we expect to have something that will impress the people of the entire state with the practicability of building good roads. The movement is young and on account of the youth of this commonwealth it needs conscientious support as well as local interest and active coöperation by the people."

Henry L. Bowlby, state highway commissioner of Washington, who has just completed a trip of 5,000 miles, visiting various points of the state to familiarize himself with conditions, said this at a recent meeting with the commissioners of Spokane county and officers of the Spokane County Good Roads Association.

As an instance of what can be accomplished by arousing local interest, Mr. Bowlby pointed to the work at Rosalia, Wash., last year. Three business men of the place were given permission to macadamize Main street and several of the side streets. The farmers coming into town laughed at them. After the work was completed and winter came on these were found to be the only good roads in Whitman county. The farmers stopped laughing. Then the farmers who had laughed before came and wanted the macadamizing extended. They subscribed $1,700 for extending the work south of the town. Now they have asked for state aid on a mile and a half more. The business men personally inspected the work there and kept the price down to $5,000 a mile for everything. The state-aid road will be put in next spring by W. J. Wilmer and M. Brockway, business men of Rosalia. They have contracted to do the work at what it cost for the roads already made and will make no profit, but will do it through their enthusiasm for good roads.

J. A. Elliott, of the highway engineering department, who met Mr. Bowlby in Spokane, reported on the Spokane-Spangle road to be built by state aid, the state and county sharing the cost. The road will be part of the main trunk road from Spokane to Walla Walla. He is relocating the road where necessary. Where the road now has six or seven railroad crossings on grade it will have none when relocated. The only three crossings not eliminated by the relocation will be under the tracks.

RECORDS BROKEN ON ATLANTA SPEEDWAY



LEWIS STRANG IN THE 120-HORSEPOWER FIAT—ASA CANDLER, JR., BUILDER OF SPEEDWAY

ATLANTA, GA., Nov. 9—Special telegram—Today's opening of the new 2-mile motor speedway was most auspicious and 20,000 southern motor enthusiasts, mingled with a goodly number of northern brethren, cheered to the echo some of the finest speedway racing seen in America. The new course was in the best of condition, not a semblance of dust rising from its surface, even when cars were traveling over it at 100 miles per hour on the stretches. The day was fine and everything went without a hitch.

Lewis Strang, driving the 120-horsepower Fiat, set the ball rolling, being the first car sent away in the opening event which was the mile time trials. After warming up around the big oval Strang opened the monster on the back stretch, held the banked turn with scarcely a symptom of a skid and tore down the home stretch across the wire which set the automatic timing apparatus in operation. A mighty cheer greeted the announcement of 37.71 seconds for the mile, or at a pace of 95 miles per hour.

The Fiat which Strang is driving in the speedway events is the car in which Nazzaro made the record of 121.64 miles an hour on Brooklands track, England. This big car, which was recently purchased by E. W. C. Arnold, of New York, who has signed Lewis Strang to drive it. It possesses a huge motor with four cylinders cast in pairs. The bore is 7.48 inches and the stroke 6.29 inches. The single camshaft is situated on the offside of the engine within the crank chamber and is actuated by the unenclosed timing wheel, the shaft extending through the camshaft chamber carrying this wheel having a second and smaller very thin spur wheel to drive the low-tension magneto. Inlet and exhaust valves are placed overhead; the inlet valves motioned by long tappet rods and rocker arms. The inlet valves are enormous and are about 3½ inches in diameter. The exhaust valves are on the opposite side, also controlled by tappet rods and rocker arms and the eight valves—two to each cylinder—are side by side and proportionately as large as the inlets. The workmanship and design in this motor is noticed when the exhaust tappet rods are at their lowest points in the cycyle of operation, when the respective arms only barely clear the cross rod, which supports the inlet valve rockers, by little more than the thickness of a thin card.

Oldfield, in the Hemery Benz, made the mile in 40.13 seconds, thus breaking his mark of 43.10 seconds made on the Indianapolis speedway. Walter Christie, with

ATLANTA SPEEDWAY—STRAIGHTAWAY CUT THROUGH HILLS

TUESDAY'S SUMMARIES

1-MILE TIME TRIALS

Car	H. P.	Driver	M.P.H.
Fiat	120	Strang	95.4
Benz	120	Oldfield	89.6
Christie	120	Christie	81.1

10-MILE 450-600 STOCK CHASSIS

Car and H. P.	Driver	Time	M.P.H.
National, 40	Aitken	8:27.22	71.2
National, 40	Kincaid	8:27.71	71.2
Apperson, 50	Harding	8:50.86	67.8

10-MILE 161-230 STOCK CHASSIS

Chalmers, 30	Matson	9:49.46	61.
Chalmers, 30	Knipper	9:49.84	61.
Buick, 18	Nelson	9:50.18	61.

2-MILE FREE-FOR-ALL

Fiat, 120	Strang	1:37.18	74.
National, 60	Aitken	1:43.72	70.
Christie, 120	Christie	1:51.5	64.6

10-MILE HANDICAP

Car and H. P.	Driver	Time
Marmon, 35	Stillman	8:59.96
Marmon, 32	Harroun	9:05.98
National, 60	Aitken	9:12.41

200-MILE 301-450 STOCK CHASSIS

Car and H. P.	Driver	Time	M.P.H.
Buick, 30	Chevrolet	166:48.46	72.2
Chalmers, 40	Dingley	173:33.9	69.1
Chalmers, 40	Lorimer	175:15.6	68.4

CHEVROLET'S TIME

10	8:17	110	92:14
20	16:24.30	120	100:24
30	24:31	130	108:37
40	32:31	140	116:50
50	40:32	150	125:02
60	49:01	160	133:14
70	57:30.80	170	141:32
80	67:49	180	150:07
90	75:58	190	158:35
100	84:08	200	166:48

his four-cylinder front-wheel drive, made the distance in :43:82, but shot off in the homestretch. A 30-60-horsepower Stearns driven by J. M. Rutherford took 50.82 seconds.

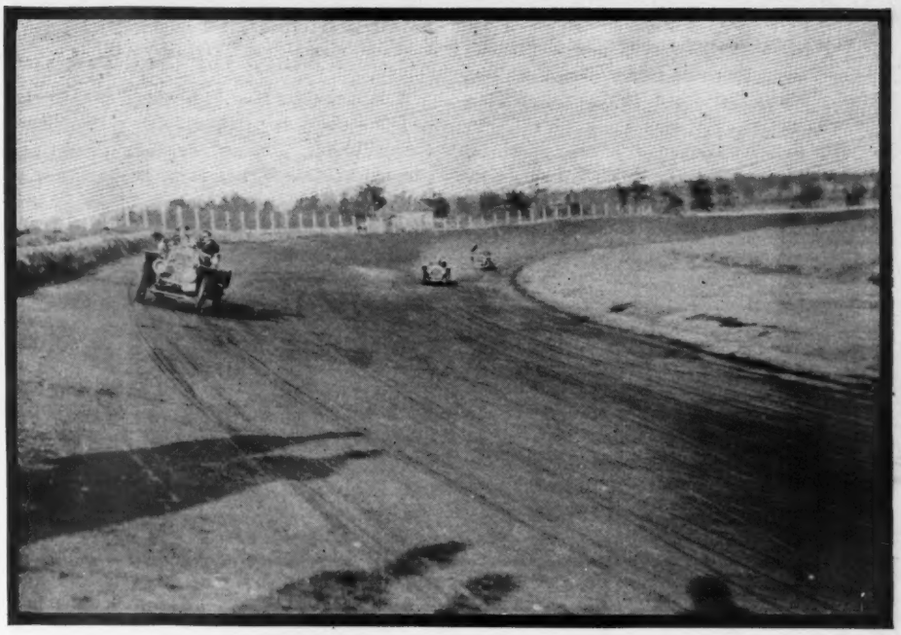
Event No. 2 was a 10-mile race for stock chassis, 451 to 600 cubic inches. This brought out a field of six and was won by John Aitken in a National four in 8:27. Kincaid in another National four was second in 8:27.71. Harding in the Apperson Jackrabbit was a quarter of a mile behind, having sheared off the magneto driveshaft. The 35-45 Renault driven by Basle was fourth. This race was a battle royal between the two Nationals, but up until the accident to the Apperson the latter was a strong contender, trailing the two Nationals which raced alongside of each other for lap after lap.

Event No. 3, a 10-mile race for stock chassis 161-230 cubic inches, proved to be the greatest race of the day and one of the best ever witnessed in track or road racing in America. The three cars making the sport were two Chalmers Thirties piloted by Matson and Knipper and a Buick model 10 driven by J. Nelson. These three cars never were two lengths apart from start to finish. The little Buick led the Chalmers pair off and on until the last lap when both Chalmers pulled two or three lengths ahead because of the Buick breaking a side member of its frame. Matson was winner in 9:49.84, with Knipper second in 9:49.46 and the Buick not two lengths back of the Chalmers pair. A White gasoline car was fourth and a Fuller fifth. From start to finish the grand stand crowd was cheering. The Buick led past the tape the first lap with the Chalmers running side by side not a length back of it. Buick led on the second lap by not a car length. It led on the third lap, although in this the two Chalmers had passed the Buick on the back stretch, yet it overtook them on the curves by going higher to the outside of the bank and then cutting in. On the fourth lap the two Chalmers led, still running a dead heat side by side and the Buick not a length back. This order continued throughout the last lap.

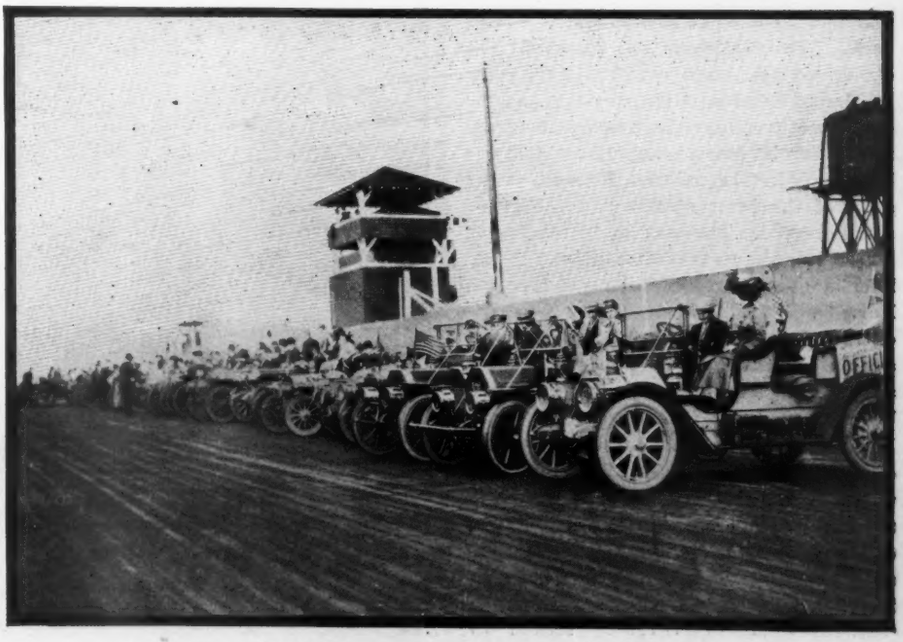
The 2-mile free-for-all handicap was won by Strang in the 120 Fiat in 1:31.63. Oldfield in the Benz was second in 1:37.18. Aitkin in the National six was third in 1:42.72, and Christie was fourth and last in 1:51.4.

Two Marmons carried off the first and second honors in the 10-mile free-for-all handicap. Stillman driving Marmon 35 took 8:50.96 and Harroun in the Marmon 32 took 9:05.67. The Marmons got the big end of the handicap and never were in danger. Aitken in the National six was nearly scratch man and would have been a big factor had the race been a lap or two longer, as he was setting a terrific pace. Oldfield in the Knox six was scratch and on the first lap some flywheel trouble developed and the car did not finish the circuit.

The last race today, and naturally the big drawing card, was the 200-mile race for stock cars 301 to 450 cubic inches for the Coca-Cola trophy donated by A. Candler, the founder and owner of Coca-Cola. This brought out a field of nine starters and was won by Chevrolet in a model 16 Buick, 4½-inch bore and 5-inch stroke. Chevrolet's race was a record-breaker, the speed averaging slightly over



ATLANTA SPEEDWAY—TURNS ARE 65 FEET WIDE



ATALANTA SPEEDWAY—NORTHERNERS FORMALLY INSPECT THE PLANT

WEDNESDAY'S SUMMARIES

10-MILE 451-600 STOCK CHASSIS

Car and H. P.	Driver	Time	M. P. H.
Apperson, 50	Harding	8:30	70.5
Stearns, 30-60	Marquis	9:30.66	63.0
Fiat, 60	Robertson	*	
Fiat, 60	Strang	*	

* Did not finish

10-MILE AMATEUR

Buick, 30	Oldknow	8:52.56	67.6
Stearns, 30-60	Rutherford	8:52.57	67.6
Chalmers, 40	Travis	10:02	59.8

10-MILE MATCH RACE

Fiat, 120	Strang	7:01.94	85.5
Benz, 120	Oldfield	7:27.71	80.4
Christie, 120	Christie	*	

* Stopped fourth lap

4-MILE FREE-FOR-ALL

Fiat, 120	Strang	2:47.03	86.1
Christie, 120	Christie	3:07.63	76.7
National, 60	Aitken	3:10.41	75.6
Fiat, 60	Robertson	*	
Rainier, —	Disbrow	*	

* Did not finish

100-MILE 161-230 STOCK CHASSIS

Chalmers, 30	Knipper	100:46.82	59.5
Chalmers, 30	Matson	101:52.46	58.6
Buick, 18	Nelson	103:10.42	58.1
E-M-F, 30	Yerger	*	
E-M-F, 30	Jones	*	
Fuller, —	Schroitzer	*	

* Did not finish

KNIPPER'S TIME

10	10:02	60	60:56
20	19:51	70	70:42
30	29:41	80	80:29
40	39:40	90	90:30
50	51:09	100	100:46.82

72 miles per hour. He only made one stop in the double century and that about the fiftieth mile, when his carbureter took fire from a back fire from the motor. This soon was extinguished on the back stretch. He did not stop once for oil, gasoline, water or tires. Dingley in a Chalmers was second more than a lap behind and Lorimer in another Chalmers Forty was third. At the time the race ended a Renault was running fourth.

Chevrolet showed his old-time racing generalship by jumping into the lead at the crack of the starting pistol. The grand stand was early to recognize him a probable winner and he was cheered at the end of every lap. For the first 30 miles he was closely pursued by the Chalmers pair, Lorimer and Dingley, with a Marmon and Rainier disputing matters 200 yards to the rear and a couple of Renaults still further back. Two Nationals also started. The one driven by Aitken went out in the sixth lap due to breaking a steering arm and the other had troubles. It was not long before Chevrolet started lapping the field one by one. First he nailed a Renault at the start of the home stretch and the grand stand cheered. The next lap he caught the other Renault at the same point. A lap later he overtook the Rainier and then the Marmon. At this juncture Chevrolet started to lap the two Chalmers and this was a task. He trailed No. 15 and finally after a score of laps overtook him. Dingley was his next objective and it required fifteen laps or 30 miles to cut down a lead of a couple of hundred yards. Two laps later the Buick carbureter caught fire. Tire trouble and slipping clutch lost the two Charmers their advantage and gave Chevrolet the lead again. The Marmon car driven by Stillman ran with remarkable consistency and was runing second to Chevrolet when it threw a tire.

Strang and Billy Knipper Stars the Second Day

Atlanta, Ga., Nov. 10—Special telegram—The second day of the 5-day meet opened today under gloomy weather conditions, the sunless skies, however, not preventing the crowd which filled nearly every one of the 6,000 bleacher seats and one-third of the main stand.

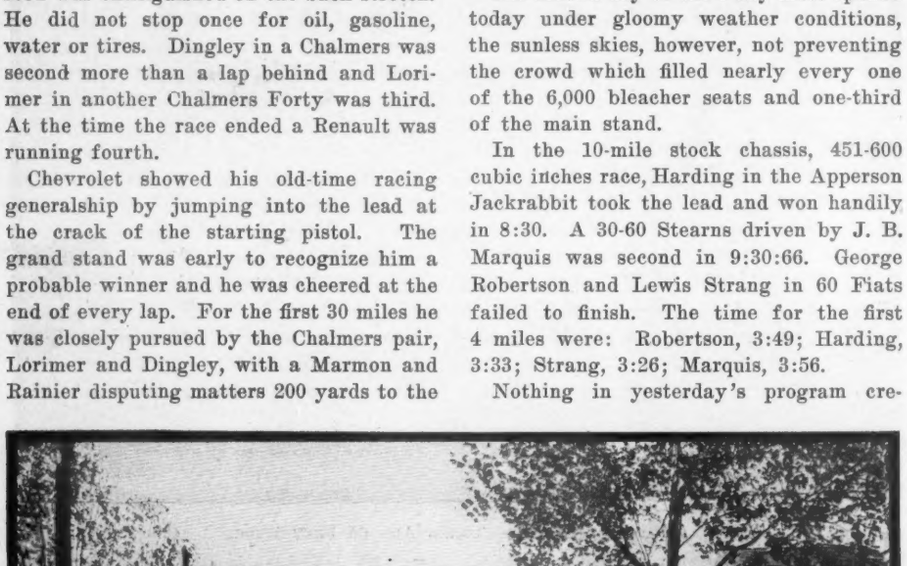
In the 10-mile stock chassis, 451-600 cubic inches race, Harding in the Apperson Jackrabbit took the lead and won handily in 8:30. A 30-60 Stearns driven by J. B. Marquis was second in 9:30:66. George Robertson and Lewis Strang in 60 Fiats failed to finish. The time for the first 4 miles were: Robertson, 3:49; Harding, 3:33; Strang, 3:26; Marquis, 3:56.

Nothing in yesterday's program created more interest than today's 10-mile amateur free-for-all with three entries. It was won by a Buick driven by W. E. Oldknow, whose time was 8:52:56. Second was a Stearns 30-60 driven by J. M. Rutherford in 8:52:57. A 40 Chalmers driven by C. Travis was third in 10:02. Rutherford got a lead at the start and soon was 100 yards ahead. Oldknow gradually cut down the lead until swinging into the home stretch on the last lap when he was at Rutherford's heels. Down the quarter-mile stretch they were side by side, and at the tape Oldknow's front wheels were 2 feet ahead of Rutherford's. It was a more spectacular finish than that of the Chalmers-Buick race of yesterday because of the uphill race Oldknow drove from start to finish.

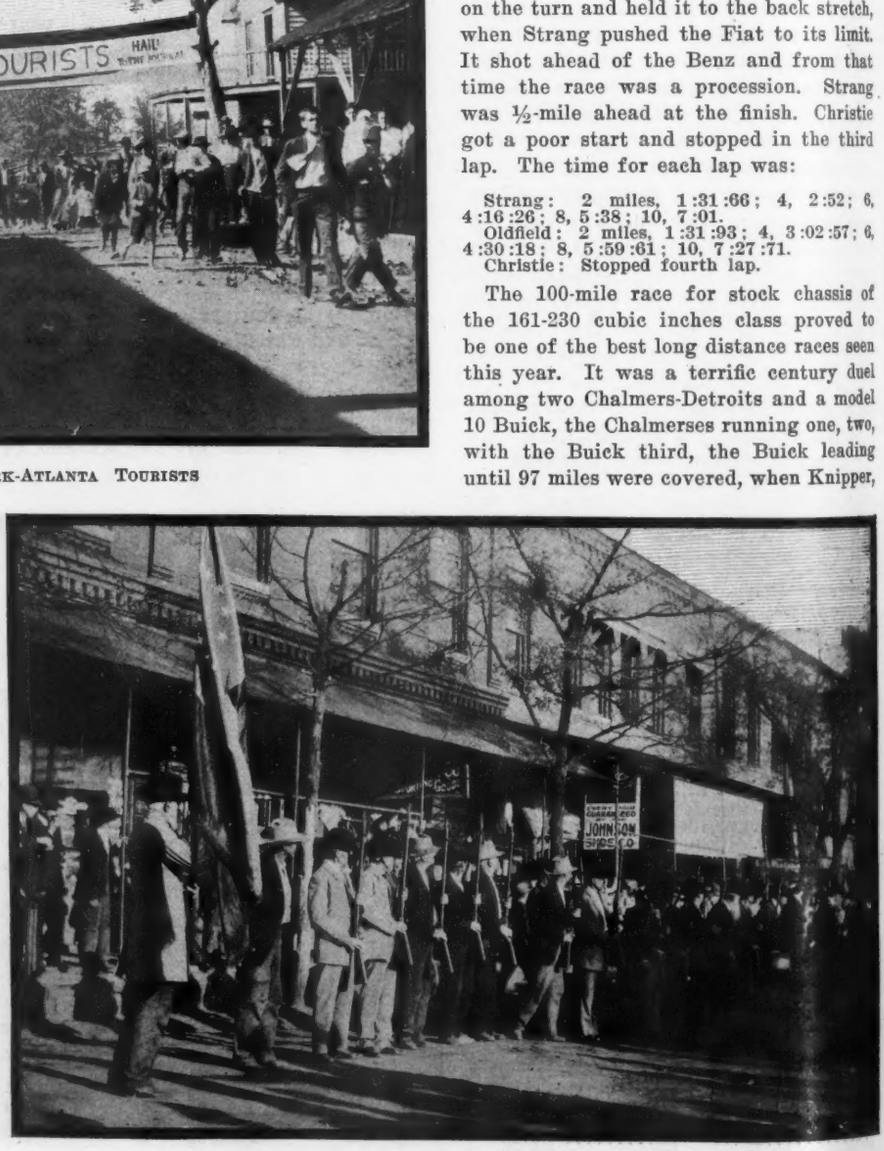
A special event today was the 10-mile match among Strang in the 120 Fiat with its double exhaust valves, Oldfield in the grand prix Hemery Benz and Christie in his four-cylinder front-wheel drive car. This was a moving start and Oldfield put the Benz into the lead, this being the first time that the big Fiat ever was in second place. Barney increased his lead on the turn and held it to the back stretch, when Strang pushed the Fiat to its limit. It shot ahead of the Benz and from that time the race was a procession. Strang was ½-mile ahead at the finish. Christie got a poor start and stopped in the third lap. The time for each lap was:

Strang: 2 miles, 1:31:66; 4, 2:52; 6, 4:16:26; 8, 5:38; 10, 7:01.
Oldfield: 2 miles, 1:31:93; 4, 3:02:57; 6, 4:30:18; 8, 5:59:61; 10, 7:27:71.
Christie: Stopped fourth lap.

The 100-mile race for stock chassis of the 161-230 cubic inches class proved to be one of the best long distance races seen this year. It was a terrific century duel among two Chalmers-Detroits and a model 10 Buick, the Chalmerses running one, two, with the Buick third, the Buick leading until 97 miles were covered, when Knipper,



WAITING FOR NEW YORK-ATLANTA TOURISTS



CONFEDERATE VETERANS TURN OUT TO GREET TOURISTS

who was three lengths back, jumped into the lead because Nelson in the Buick ran short of oil and did not take a chance to stop long enough to take on a can of lubricant. Matson, who was running third not 3.4 mile back of the leaders, picked up the Buick and took second place.

The race was filled with thrills from start to finish and the fact that it was run in a mist did not in any wise detract from the high pitch of interest which was maintained all the way.

Knipper, in his little Chalmers, led until the forty-seventh mile, when he stopped to tighten a valve cage, thereby allowing Nelson in the Buick to take the lead. Before Knipper got started again the Buick had a good ¾-mile margin, and it took Knipper exactly 32 miles to catch him, which was done as they rushed into the home stretch at the end of the thirty-ninth lap, or 78 miles from the start.

The entire 20,000 people in the grand stand were on their feet and a maddening cheer broke forth from the Chalmers' enthusiasts as their favorite car rushed past scarcely one length in the lead. Knipper held his position for four laps, during which time the Buick kept gaining foot by foot. When they passed the grand stand on the forty-third lap Knipper had an advantage of but 1⅕ seconds and on the forty-fourth lap the Buick jumped into the lead, the Chalmers slowing perceptibly because of feeding too much oil, the car running in a cloud of smoke.

There was a deafening cheer when Nelson put the Buick to the front and with only 12 miles to go it looked a certain Buick victory. Once in the lead Nelson gained rapidly and was 100 yards ahead at the end of the ninety-second mile. On the forty-seventh lap Knipper gained slightly and when they both dashed into the forty-eighth before the back stretch was entered Knipper began rapidly closing the gap. A moment later another deafening round of cheers was sufficient announcement that the Chalmers was once again in the lead. It was clearly apparent that the Buick was in distress, lack of oil being the trouble. From this on it became a procession for Knipper.

Although never figuring as a probable first or second, Joe Matson, in another little Chalmers, was putting up one of the strongest fights of his career. He had to stop in the second lap to replace a spark plug which lost him more than a lap. From this on he ran with remarkable consistency, gaining more than a lap on the Buick and Knipper, but never able to get more than within striking distance of first place until the second lap, when the Buick's oil trouble occurred.

Knipper's performance of 100 miles in 100 minutes 46.82 seconds, or practically 60 miles an hour, is a most remarkable one for this distance and for a car with 4 by 4½-inch cylinders. The performance of the Buick was more remarkable as its cylinders are 3¾ inches square.

Although the real contest was the Chalmers-Buick duel, three other cars competed, two being E-M-F's and one a Fuller four-cylinder car. One of the E-M-F's dropped out at the end of 44 miles, but the other, running at the finish, had completed 88 miles and was awarded fourth place.

This race demonstrated to the satisfaction of everybody that it is not the biggest cars that give the most entertainment to the spectators. The enthusiasm in this race was greater than that of the special race among Strang, Oldfield and Christie, it being a foregone conclusion that Strang would make a runaway contest of it.

TIME MADE IN WEDNESDAY'S 100-MILE RACE BY LITTLE CARS

	Knipper Chalmers	Matson Chalmers	Nelson Buick	Jones E-M-F
10 miles	10:02	13:26	10:30	12:22
20 miles	19:51	23:12	20:36	24:24
30 miles	29:41	32:53	30:35	.....
40 miles	39:40	42:28	40:39	.....
50 miles	51:09	52:18	50:36	.....
60 miles	60:56	62:02	60:00	73:00
70 miles	70:42	71:59	70:31	.....
80 miles	80:29	81:55	80:31	85:02
90 miles	90:30	91:55	90:28	.....
100 miles	100:46.82	101:52.46	103:10.42	.....

LUNCH FOR NEW YORK-ATLANTA TOURISTS AT SPEEDWAY

ARRIVAL OF NEW YORK-ATLANTA TOURISTS AT ATLANTA

MANY PERFECT IN NATIONAL HIGHWAY TOUR

ATLANTA, GA., Nov. 4—Twenty-six cars finished with perfect scores in six classes in the first annual good roads tour from New York to this city, the prize awards having been distributed at a banquet this evening. Two of the seven cars were tied for honors in each of the five principal classes of the tour. The Mitchell pathfinding car, driven by Frank X. Zirbies, was given special mention by the judges, having been at the head of the procession from the start. All of the cars that started with the exception of two finished the tour. Eight discontinued the trip at various stages, but came back into line and finished the run as noncontestants. The perfect scores by classes were awarded as follows:

CLASS 1

No. 4—Thomas Flyer, J. J. Woodside, Atlanta.
No. 17—Thomas Flyer, J. L. Barnes, Atlanta.
No. 23—Thomas Flyer, Charles I. Ryan, Atlanta.
No. 30—Renault, Renault-Freres Agency, New York.
No. 35—Matheson, Matheson Automobile Co., New York.
No. 44—Benz, chamber of commerce, Atlanta.
No. 49—Apperson Jackrabbit, Automobile Blue Book Publishing Co., New York.

CLASS 2

No. 48—White steamer, Walter C. White, New York.
No. 54—Franklin, W. C. Cleveland, Greenville, S. C.

CLASS 3

No. 20—Premier, A. Burwell, Jr., Charlotte, N. C.
No. 25—Pennsylvania, Pennsylvania Sales Agency, Atlanta.
No. 39—Selden, E. Harris, Atlanta.
No. 46—Oldsmobile, E. R. Douglas, Miami, Fla.
No. 52—Corbin, chamber of commerce, Roanoke, Va.

CLASS 4

No. 2—White steamer, board of trade, Commerce, Ga.
No. 5—White steamer, chamber of commerce, Anderson, S. C.
No. 7—White steamer, board of trade, Moultrie, Ga.
No. 10—Buick, chamber of commerce, Spartanburg, S. C.
No. 16—Buick, William Oldknow, Atlanta.
No. 27—Maxwell, toy tonneau, Maxwell-Briscoe Motor Co., entered by Marietta, Ga., agents.
No. 43—Chalmers-Detroit, Read Holliday, New York.

CLASS 5

No. 18—Maxwell, J. H. Hall, Charlotte, N. C.
No. 19—Studebaker, W. J. Stoddard, Atlanta.
No. 31—Reo, R. M. Owen & Co., New York.
No. 42—Regal, E. D. Crane & Co., Atlanta.

CLASS 6

No. 28—Maxwell runabout, Maxwell-Briscoe Co., Atlanta, Ga., only entrant in class.

Following the finish of the contest the tourists were given a royal reception by the southerners. They were given a spread at the Hotel Piedmont and then, of course, there followed a trip to the speedway, where the northerners saw what a really fine track has been built by Asa Candler, Jr., and Ed Durant.

When the 2.5-mile motor speedway was opened at Indianapolis during the past summer, it was not expected that in less than 2 months another equally as great would be located in Atlanta. The Atlanta speedway, like the Atlanta national show, is but another evidence of southern enthusiasm and shows what can be accomplished by way of booming a city and a section of country when two or three men set about to do so.

The Atlanta speedway is a 2-mile oval located 8 miles south of the city in the typical red hills of Georgia. A good well-oiled state road leads from the macadam streets of the city to the speedway entrance, making it a boulevard run to the course. The course is 2 miles around, measured 3 feet from the pole. On the straightaways the road for the cars is 100 feet wide, the two turns at one end are 65 feet wide and those at the other end 60 feet. The present intention is to make the turns 100 feet in width. The course is novel in that, being built among the hills, it has been necessary on the straightaways to cut through the hills, so that the cars dash through a channel 100 feet wide. At the ends where the banks and turns are the course has had to be built up so that at the pole the track is in one place 30 feet above the level of the ground and at the outside of the track at this point it is 45 feet to the level of the ground. This constitutes the real danger element of the course, which will be eliminated later by filling in the space inside the pole. The track is a well-oiled clay surface, black as the ordinary road race course and not a particle of dust is raised at 90 miles per hour speeds.

The general layout of the course is excellent. At the west side is the huge grand stand with 20,000 accommodation, about one-half of which is roofed, and the remainder bleachers. At the far end of the bleachers is a separate part for the colored population. This grand stand is mounted very high, and in front of it the cars travel in a channel nearly 15 feet deep and 100 feet wide. Across the roadway from the grand stand are the pits, judges and press stands. Immediately back of the press stand are the official scales and in the infield back of the judge's stand is a broad avenue lined on either side with corrugated iron garages, with three stalls to a garage, each still accommodating a car. A tank has been erected containing water for the grand stand repair pits.

Not a single detail has been overlooked in the general layout of the place and particularly good advertising value has been made of the back of the grand stand, which is alongside of the main entrance. This part of the stand is covered with uniform bill boards advertising various cars, accessories and other lines of industry.

From the grand stand the cars can be seen on all of the course excepting ⅛ mile on the middle of the back stretch. The view at this point is excluded by a slight hill in the infield and on which the garages are located. The location is picturesque in every respect. Beyond the speedway stretch in airy undulations the red Georgian hills clad with green Georgian pines, which at this season contrast well with the red and brown autumnal beauty of the oak foliage. It is an ideal spot with not a building anywhere in sight but those belonging to the speedway.

SAVANNAH-ATLANTA TOUR

Savannah, Ga., Nov. 8—Twenty-nine cars started today on the second leg of the New York-Atlanta Jacksonville route in the Savannah-Atlanta reliability run. The start was made from the garage of the Savannah Taxicab Co., where the cars were examined by the technical committee. The night stop was made at Milledgeville and Tuesday morning early the cars will set off on the rest of the long journey to Atlanta. Three prizes are to be given. In case more than two finish with perfect scores in each class the prizes are to be equally divided. A special train load of motorists will leave here Tuesday morning for Atlanta carrying more than 500 people. Below will be found the cars that are making the run of nearly 300 miles to Atlanta:

CLASS A, $2,000 AND OVER

Car	H. P.	Driver
Stevens-Duryea	60	H. Granger
Packard	30	N. Brewer
Chalmers-Detroit	30	T. A. Bryson
Stevens-Duryea	35	F. C. Battey
Packard	30	N. G. Browne
Stevens-Duryea	24	C. Barrow
White steamer	24	C. R. Tice
Stevens-Duryea	24	A. W. Solomon
White steamer	24	H. L. Hilton
Buick	40	J. S. Toole
Buick	22	J. Dub
White steamer	60	O. B. Martin
Apperson	60	N. H. VanSicklen

CLASS B, $1,250 AND UNDER

Car	H. P.	Driver
Crawford	30	W. C. Mahoney
Chalmers-Detroit	30	G. I. Taggart
Maxwell	30	R. Brockett

CLASS C, $1,250 AND UNDER

Car	H. P.	Driver
Buick	22	F. Hahne
E-M-F	30	W. Burns
Ford	24	M. E. Wilson
Schacht	18	B. G. Tippins
Maxwell	30	W. H. Towles
Cadillac	30	W. T. DeBorde
Cadillac	30	J. L. Sibley, Jr.
Buick	18	T. E. Youmans
Buick	22	A. T. Everett
E-M-F	30	L. J. Adkins
Buick	22	A. L. Weil
Maxwell	10	E. G. Gager
Cadillac	30	.....

Atlanta, Ga., Nov. 9—Special telegram—The Savannah pilot car arrived in Atlanta at 4:30 today. Twenty-five cars finished—four Stevens-Duryeas, five Buicks, three White steamers, two Chalmers-Detroits, three Maxwells, two Packards, two Cadillacs, one E-M-F, Ford and Schacht. Mayor Tiedeman fell from his car near Statesboro Monday. He broke a finger and wrenched his back. N. H. Van Sicklen dressed the finger. J. S. Sibley, Jr., No. 20, made the run in 12 hours, a distance of 304 miles. He had withdrawn his car from the run. Every car had trouble.

ATLANTA MECCA OF MANY

Atlanta, Ga., Nov. 9—Special telegram—There ended in Atlanta Tuesday a tour which stands by itself in touring annals, a run which has stirred up the state of Georgia as nothing of its kind ever did before and which incidentally brought 162

tourists to Atlanta. The tour had eight starting points and one destination, Atlanta. There were separate prizes from each city, the totals amounting to $5,000. On Monday morning the cars got away from Albany, Fitzgerald, Dublin and Savannah. The Albany, Fitzgerald and Dublin tourists spent Monday night in Macon, leaving there Tuesday. With them left the contestants in the Macon-Atlanta run. Similarly from Savannah the tourists went to Milledgeville, where another body of motor travelers and contestants was acquired. The Augusta tourists went through in a day, making the entire run Tuesday, as did those from Athens. The speed limits were taken off in almost the entire state and everybody beat it all the way. The result was a number of accidents of a minor nature, in one of which Mayor Tiedeman, of Savannah, acquired a broken finger and a wrenched back.

Vanderbilt Aftermath; Atlas Files a Protest

New York, Nov. 6—Harry F. Grant, who drove the Alco car to victory in the Vanderbilt cup race Saturday was the guest of honor at a dinner given by the officers of the American Locomotive Co. at the Engineers' Club. He was presented with a check from the company for a substantial sum. F. H. Lee, Grant's mechanic, W. J. Harris and George Babcock, who were his training attendants and pit assistants, also were rewarded with cash presents. Grant was congratulated on the fine head work his driving showed, his laps being evenly timed until toward the end, when he began to forge to the front, just as had been planned. His final lap was the fastest, and his last four laps were made at an average speed of 70.44 miles an hour. Grant received his honors modestly, but said that he could have driven on for 300 miles more.

At a meeting of the executive committee of the Motor Cups Holding Co., held in the office of William K. Vanderbilt, Jr., donor of the cup, Mr. Vanderbilt, as referee of the event, reported that he had awarded the Vanderbilt cup to the Alco, No. 8, driven by Harry F. Grant, and entered by the American Locomotive Co.; that he had awarded the Wheatley Hills trophy and added cash of $1,000 to the Marmon car, No. 32, driven by R. W. Harroun, and entered by the Nordyke-Marmon Co.; that he had awarded the Massapequa trophy and added cash of $1,000 to the Chalmers-Detroit, No. 43, driven by Joe Matson, and entered by the Chalmers-Detroit Motor Co. Mr. Vanderbilt further reported that the Fiat, No. 14, entered in class 1, was placed second, and that the Atlas, No. 5, and the Chalmers-Detroit 40 were still running when he declared the race off and that no award was made in class 2. The referee further stated that a statement had been made and signed by the official timers and scorers to the effect that they had omitted to score one lap for the Alco and that the timers and scorers as officially corrected proved their error. Mr. Vanderbilt also reported that no protests had been filed.

Notwithstanding Referee Vanderbilt's report that he had received no protests and that no winner was evolved in class 2, the Atlas Motor Car Co. filing a claim with the Motor Cups Holding Co. for the class 2 award, Referee Vanderbilt claims that the No. 7 Chalmers-Detroit, which was leading on the nineteenth lap by about 11 minutes, was running when the race was called off, as well as the Atlas. The Atlas Motor Car Co. claims that this was not so, and asserts it made this claim at the conclusion of the race to the officials in charge of the track. In its claim and protest the Atlas people hold that they are entitled to the trophy offered for class 2, in which class there were six entries. The No. 7 Chalmers-Detroit ran in this class. The evidence they have to submit shows, they assert, that the Chalmers-Detroit went out of commission on the nineteenth lap, and never started again. This entitles the Atlas to first honors in class 2, they think.

Boston, Mass., Nov. 8—The Bay State A. A. of Boston tendered a complimentary dinner to Harry Grant, winner of the Vanderbilt race, at its quarters last night. There were about fifty members present, all of them well known in the local field. President Fred Tudor sat at the head of the table and on his right was Grant. On President Tudor's left was President L. R. Speare of the A. A. A. After the dinner had been finished President Tudor started the post prandial exercises by presenting Grant on behalf of the club with a gold fob with the Bay State A. A. monogram upon it.

Mechanical Features of the Atlanta Show

(Continued from Page 9)

A review of the new motors would be incomplete without at least passing mention of the lubrication system. In a word it is the crankcase-contained circulation system which is forging to the front, and now the mechanical oiler mounted on a leg of the crankcase is comparatively rare. The big Stearns has come into line with the circulating system; the Pope-Hartford has installed a combination of this and the mechanical system, and so have some others. The oiler on the dash, where it overflowed onto the floor boards is now obsolete. For next year the only indication on the dash of a lubrication system are two or three sight feeds, and in not a few cases only one. The custom of carrying reserve oil tanks on the chassis is growing. A pump to inject it into the crankcase is used.

Considerable activity has been displayed in the matter of flywheel clutches for next season. A notable departure in this line is the introduction of dry-disk clutches by the Packard and Stearns companies, the latter only in its 30-60 cars. The Stevens-Duryea was the pioneer in the dry-disk clutch field, it bringing out the multiple-disk clutch with leather facing 5 years ago. The Stevens has continued to use the dry clutch ever since, although the leather has been replaced by thermoid, raybestos and other wire-asbestos combinations. In the new Packard a comparatively few disks are used and these are faced with wire-asbestos facing. In the Stearns one set is faced on each side with this facing. The rest of the clutch situation remains almost unchanged. The Rambler cars, however, are fitted with an expanding type of clutch. The cone type is still used on Pierce and Stoddard cars. Some of the exponents of multiple-disk clutches are Winton, Franklin, Premier, Chalmers thirty, Reo four, Maxwell, Inter-State, etc.

The selective gearset has increased in favor during the year. As yet the three-speed set is in the majority, but there is a big array of sets giving four forward variations. In this category are noted Pierce, Peerless, Winton, Locomobile, and some Apperson models. The Maxwell model Q and Hudson are examples of the three-speed set entering into the makeup of cars selling at below the $1,000 mark. The planetary is still used on the one and two-cylinder Reos, Ford, Brush, Buick 10's, etc. There are four or five examples of friction transmission, these including the Lambert, Cartercar, Petrel, Metz and a part chassis shown by the Acorn Motor Works. The aluminum disk on a continuation of the crankshaft and the fiber-faced wheel on the cross shaft continue to comprise the conventional friction system.

In final transmission of power to the rear axle the shaft is away in the supremacy. There are a few examples of chain, these being the Locomobile forty, some of the Apperson models, Brush runabout, Cartercar, Lambert, Petrel, and one and two-cylinder Reos. The floating rear axle is gaining in favor.

Friction materials of woven wire and asbestos are replacing metal against metal in brakes. These materials are more easily replaced and brakes with this facing are quieter in operation.

Not a few makers are using the two sets of expanding rear wheel brakes in place of one expanding and one contracting set. Using two expanding sets an oil and dust-proof construction can be obtained. With two expanding sets the brake drum is made wider and the sets are placed side by side. Marmon has been for a couple of seasons an example of this construction.

DESERT ROAD RACE CAPTURED BY A BUICK

PHOENIX, ARIZ., Nov. 8—The Los Angeles-Phoenix race, which last year was won by F. C. Fenner in a White steamer in 30 hours 26 minutes, was captured this year by the Buick driven by Joe and Louis Nikrent, who finished the 480-mile trip this afternoon in 19 hours 13 minutes, or an average of 44.14 miles per hour for the 480 miles. This was not continuous running, however, there having been a control at Ehrenberg, occasioned by the fact that the ferry there is a hand affair and the only means of getting the cars across the river. Because of this the cars were held until 4 o'clock this morning, when they were permitted to resume the race, the final run to Phoenix being 187 miles.

Second to finish today was the Columbia driven by Harold Stone, whose time was 23:35:20. Bert Latham, Will LaCrosse and Harry Lord in the E-M-F were third in 23:36:06; and Harris Hanshue, Lee Gehrick and C. Biglow in the Kisselkar were fourth in 26:04:23. The Isotta really finished second in point of time, but was placed last by the judges because it was towed into town, Fenner claiming carbureter trouble near Phoenix, which compelled him to seek a tow. Up to a late hour tonight the Elmore, Pennsylvania and Ford had not finished. Of the others the Franklin broke an axle housing at Mecca and the Dorris hit a tree at Palm Springs. The Buick got into the lead at the Colorado river and from there fought it out with the Isotta.

The start was from the heart of the business district in Los Angeles Saturday night and was witnessed by thousands of people, who blocked the street so it was almost impossible for the electric cars to make headway. From Second and Main north to Eastlake park both sides of the street were lined with motor cars and as the different contestants passed they were given a parting cheer. It was a gala night for the motorists of Los Angeles and thousands of others joined in the fun. The police officials marred the first 2 miles of the race by issuing orders that none of the contestants was to exceed the speed limit. Some obeyed the orders and others took a chance.

Referee John S. Mitchell started the first car, the Isotta, at 10 o'clock. At this time it was necessary for a large force of policemen to clear the street so the car could get through. The Isotta was soon lost to sight and before its smoke had disappeared the two-cycle Elmore with D. B. Rose at the wheel was rolled into place to await the starting gun 15 minutes later. The crowd continued to grow larger and 5 minutes before time for the Elmore to shoot away the police were again forced to clear a path for the car. The other cars followed 15 minutes apart and at midnight the last of the contestants, a six-cylinder Kisselkar, with Harris Hanshue at the wheel, left for the desert.

All the cars were stripped and equipped for desert going. Some carried sand shoes, others depended upon chains and a few took nothing whatever to assist in the deep sand. Every machine carried extra tires, extra oil, water and gasoline tanks, buckets, shovels, a block and tackle, blankets and something to eat in case of a breakdown. In fighting their way across the worst of the sand the machines get over 15 miles from a railroad and a breakdown while running in last place would be a serious matter.

The winner receives a handsome challenge cup and $1,300 in money. A similar amount will be contested for Thursday on the mile track at the fair grounds. The race is under the auspices of the Maricopa Automobile Club.

When the cars left Los Angeles they had the choice of two roads to San Bernardino, 63 miles away. One road led through El Monte and Pomono and the other took the cars through Pasadena, Monrovia, Claremont and Uplands. The two roads join here, going through the vineyard district of Cucamonga across the 10-mile desert strip to San Bernardino. This first leg of the course is through the orange belt and for miles and miles the road is lined by orange and lemon trees.

The road continues southeast, skirting the pretty town of Redlands and going over a rolling country to Beaumont. The road this far is good, but from Beaumont to Banning it is rough in places. From Banning the road stretches like a ribbon for 15 miles to the Whitewater ranch. It is a series of ups and downs and the most careful driving is necessary. The course leads through the Indian reservation. At Whitewater the sand begins and the cars were forced to go into their low and intermediate. Just beyond the first sand strip there is a river bottom to cross and then 10 more miles of sand to Palm Springs. This is sand every foot of the way. From Palm Springs to the desert town of Indio there are 23 miles of deep sand and powdered dust. From Indio to Mecca there is good going for 16 miles. At Mecca most of the cars changed drivers. Some picked up new men and others simply changed seats. Gasoline and water were taken on here.

The real battle with the sand began just out of Mecca. To Los Palms and Chucawalla there is sand in which a car

TYPICAL ROAD THROUGH DESERT TRAVERSED BY CARS IN LOS ANGELES-PHOENIX RACE

will sink to the body if it hesitates a few seconds. The only hope in this was to keep moving. Some of the contestants used canvas strips to assist them. Almost every contestant got stuck in this bad sand. From Reynolds to the Colorado river the road twists in a very deceptive manner.

TRACK MEET AT MACON

Macon, Ga., Nov. 6—Before a crowd of 10,000 people today Henry Lamar, Jr., in an Oldsmobile, broke the 5-mile state track record by 11 seconds, making each of the miles as follows: 1:02⅖, 1:02⅖, 1:00⅗, 1:01, 1:01. Total, 5:10. In a 3-mile heat between Barney Oldfield in a National and Henry Lamar in an Oldsmobile, Lamar won in 3:49. Ben Kirscher, driving a 100-horsepower Darracq, followed with a mile in :55⅕. Oldfield next gave an exhibition against time in :54 in his Benz. The first heat of a 5-mile race between Oldfield and Kirscher was won by the former. The second also was won by Oldfield.

AFTER COBE CUP RACE

Chicago, Nov. 8—Although the Chicago Automobile Club has not as yet made plans for the second renewal of the Cobe cup there are several candidates in the field for the plum, Wisconsin and Illinois having determined to bid against Indiana. The grand stand at Crown Point has been torn down and it is by no means certain the Indiana course will be used again. Therefore rival candidates have sprung up. The Illinois offering is at Elgin, 40 miles from Chicago and which offers excellent transportation facilities in addition to having the annual encampment of the state troops in June, who could be used for the purpose of guarding the course. The circuit is about 10 miles in length and with only three turns in it. It is a gravel pike and wide enough anywhere for two cars to pass and in some places three. It is only a mile from the heart of Elgin and can be reached by street car. M. C. Moore, the new president of the Wisconsin State A. A., started the movement to get the Cobe cup race for Wisconsin. President Moore believes that several courses he has in view in southern Wisconsin, near the Illinois boundary, are admirably suited for the race, and that the Chicago Automobile Club would find it more profitable to enter Wisconsin than any other place. It is claimed that the Wisconsin courses in view would attract more people than the Indiana course. Hundreds of wealthy Chicago and eastern people have summer homes in the southern Wisconsin lake region, and they have provided excellent roads, which if properly connected would make an ideal road race course.

OWNERS' ASSOCIATION GROWING

Boston, Mass., Nov. 6—The Automobile Owners' Association of Boston at its last meeting changed its name, so that now it is known as the National Automobile Association. This was done because it was found that its influence was extending beyond New England and that its membership was growing so fast that it bids fair to be the largest organization of its kind in the country. The officers plan to make it, eventually, an association here similar to the big organizations in France and Great Britain, that do so much for the motorists. The organization is now entering upon its sixth year, and for 1910 four departments will be maintained. These comprise legal, touring, highway and insurance departments. Competent officers will be in charge of each. Arrangements have been completed whereby any member or his operator charged with a violation of the motor laws of Ontario, Quebec, Nova Scotia, New Brunswick and the United States may call upon the association to be defended by a local attorney, who will be affiliated with the organization. In case a member's car is not insured he will be defended in any civil suit for damages caused by the car. The touring department is in charge of George H. Power. He will furnish members with information of all sorts relative to roads and tours. The association now is working upon a plan whereby its members may tour Canada by simply arranging a bond which the organization will furnish.

NEW CLUBS IN A. A. A.

New York, Nov. 8—Three new clubs were elected to membership in the American Automobile Association at the regular monthly meeting of the executive committee held at national headquarters. They were: Atlanta Automobile Association, of Atlanta, Ga.; Waco Automobile Club, Waco, Texas, and the Rowan County Automobile Club, of Salisbury, N. C. At the same time favorable reports were received indicating that active work is progressing toward the formation of state associations in Texas, North Carolina, Alabama and Florida. Secretary B. M. Reed, of the Tampa club, stated that motoring interest was increasing rapidly in all parts of Florida and the clubs that are likely to be affiliated with the state body will be the Tampa, Daytona, De Land, Orlando, Bartow, Brookville, Ocala, Gainesville and Jacksonville clubs. President Lewis R. Speare, of Boston, who presided at the meeting, announced the appointment of Ralph W. Smith, president of the Denver Motor Club, also president of the Colorado State Automobile Association, as a member of the A. A. A. executive committee.

PART OF LOS ANGELES-PHOENIX ROAD RACE WAS THE BED OF A RIVER

AT BRUSSELS—RICHARD IN MARTINI WITH CHINAMAN FOR MECHANIC

Hemery Breaks Kilometer Record

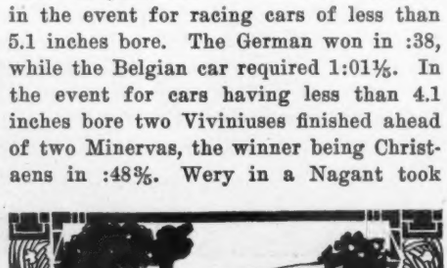
BRUSSELS, Oct. 23—Driving his Benz racer at a reckless speed upon a wet road which was made even more dangerous by occasional showers, Hemery, the French driver of Vanderbilt race fame, won the world's kilometer championship and made a new world's record for the classical distance by going the .622 miles in 31⅕ seconds, or at the rate of 72.1 miles an hour. It all happened last Sunday. Every year the commercial association of Brussels, with the assistance of the city, promotes a week of events embracing the sport, drama, music, etc., for the purpose of bringing to the city a large crowd of provincials and foreigners. This year Baron Pierre de Crawhez, chairman of the sports committee of the Royal Automobile Club of Belgium, suggested a big motoring event—a kilometer speed contest which would be known as the world's championship. Having been announced a bit late only about sixty-five cars were there. The place chosen to hold the trials was the route de Tervueren, and passing close to the palace of the king. It was intended and in fact announced that it would be a flying start event, but owing to an all-night rain and the slippery condition of the road it was decided as a matter of safety to make it a standing start contest.

Interest was centered upon the five big racing cars—two Mercedes having Jenatzy and Pilette as pilots, the six-cylinder Rossel of Gaste, the big Opel of Joerns and the still bigger Benz of Hemery. There were seven starters in the class for voiturettes having up to 4.11 inches bore. G. Sizaire, in a Sizaire-Naudin, was the winner in 1:14⅕, another Sizaire being second, followed by a Martini, a F. I. F., a Martini, a Delage and a Le Gui. Only two grand prix voiturettes lined up in the event for that class, a de Bazelaire, with d'Avaray at the wheel, and a Martini driven by Richard. The former won in 1:04⅘. His mechanic was a Chinaman. Three Miesses and a Cottin-Desgouttes lined up in the class where 3.1 inches was the maximum bore. The Miesses driven by Antoine won in 1:18⅕.

Four Pipes, a Belgica, a Vivinius and a Nagant started in the class for cars of not over 3.5 inches bore. The Nagant driven by Wery won in :57. The Pipe of Van Muffel was second. Fischer in a Vivinius beat his teammate Wilford in the class of cars with 4.1 inches as maximum bore. Fischer's time was :57⅕. Only Pipe cars started in the even for six-cylinder cars with 4.1 inches bore at the most. Delahaye, the winner, required :59⅗ to cover the 1,000 meters.

The second fastest time among the touring car contestants was made by Mathis in his Fiat in the heat for cars having a 4.7 inches bore. The time was :42⅘, at the rate of 54 miles an hour. Baron van Zuylen in a Belgica was second and the only other starter. All of the five starters in the event for touring cars of more than 4.7 inches bore made fast time. The winner was Jenatzy, who drove his Mercedes to victory in :37. Jenatzy averaged over 60 miles an hour.

An Opel driven by Joerns and a Nagant with Raeymaekers at the wheel started in the event for racing cars of less than 5.1 inches bore. The German won in :38, while the Belgian car required 1:01⅕. In the event for cars having less than 4.1 inches bore two Viviniuses finished ahead of two Minervas, the winner being Christaens in :48⅗. Wery in a Nagant took another prize by winning the event for cars having less than 3.5 inches bore. His time was :52⅗. F. Jenatzy, brother of the more famous Camille, started all by himself in the event for six-cylinder cars of not more than 4.1 inches bore. He drove a Pipe and went the distance in :50⅕. Robert Goldschmidt was the winner in the contest among cars having less than 3.1 inches bore. He drove one of the three Miesses, the time being 1:14⅘.



Hemery made the fastest kilometer run, a new world's record if accepted. The time of :31⅕ is 3 full seconds better than the record made at Ostende by Jenatzy in July upon the special-built royal motor road. Next to Hemery and the Benz the best time was that of Pilette in his big Mercedes, :33⅕, which also breaks Jenatzy's former time. The later could only make the .62 miles in :34⅘. Joerns in his Opel was fourth in :38 and Gaste in the Rossel fifth in .39⅕. It is only right to state that several of the cars had been geared specially for a flying start speed trial.

CLEAN-UP FOR THE CORBIN

Los Angeles, Cal., Nov. 4—The winter track racing season opened at the Ascot park speedway Saturday and Sunday with a series of fast events. The track has been leased by the Los Angeles Motor Racing Association, with Walter Hempel as manager. One thousand dollars in cash prizes and a number of very handsome cups were offered. The program on the opening day was made up of a series of time trials, a 10-mile race, a 5-mile handicap, and a 50-mile race. The Chadwick six took the mile time trial prize by negotiating a mile on a wet track in 1:02 4-5. The Royal, with a good handicap, won that race easily, the other cars not being in the running. The other three races were won by the Corbin, driven by Frank Free. The 50-mile derby was the feature. For the first 5 miles Billy Carlson, a 19-year-old driver, in the first Winton six ever sent to the coast, showed unusual speed and surprised the crowd by holding his own with the speedy Corbin until he had carbureter trouble, and lost several miles putting a dust protector under the air opening. Free drove a clever race in the Corbin and after the Winton stopped was a winner all the way. The time for the 50 miles was 56:55. The Winton took second and the Royal third. The Palmer Singer, poorly driven, retired.

The Sunday card consisted of a 10-mile race and a 100-mile derby. This also proved a carnival for Frank Free and his Corbin. The century provided plenty of excitement for the crowd. The Winton was first to stop, the magneto going to the bad. The Palmer & Singer, which had been running a close third, also stopped after 5 miles and lost a mile. This gave the Corbin a clear lead. The Palmer Singer was soon going, and from there on held its own with the speedy leader.

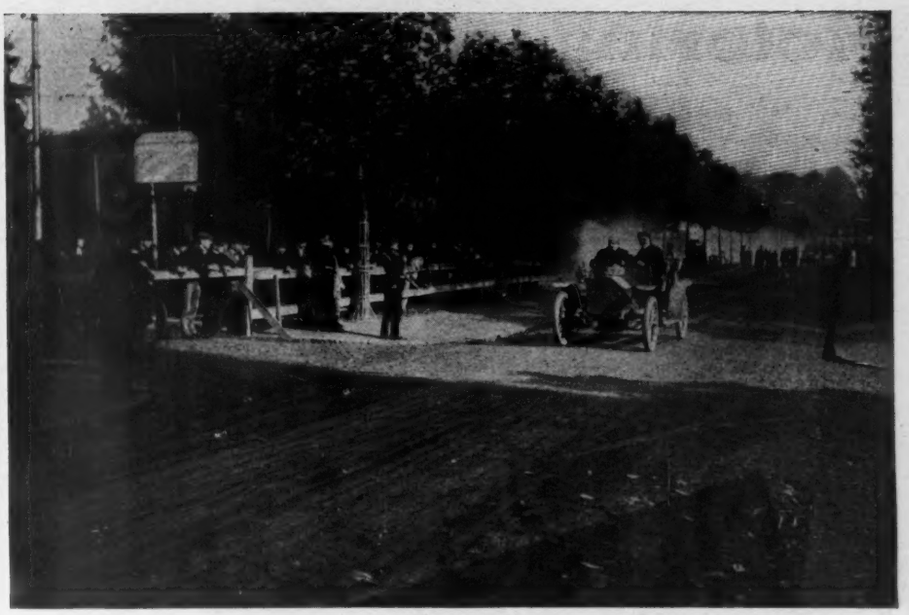
The time for the 50 miles was 55:57 3-5. At the end of the fifty-second mile Free was seen to slow up and the Corbin went into the control for a new front tire. Gardner then sent the Palmer-Singer ahead at a faster clip, and when the Corbin returned to the track the Palmer-Singer was leading by 6 miles. A little later the Corbin again stopped and the P. & S. was 9 miles in the lead and running perfectly. But the strain was beginning to tell on the leader and, after half a dozen more miles, it stopped for tires and Free not only regained 9 miles, but took a lead of one. From there on it was all over. The P. & S. stopped at the end of the ninety-second mile. The Winton was second and the Royal third. The race was an interesting one.

EXPORTS AND IMPORTS

Washington, D. C., Nov. 6—The export trade in motor cars and parts is showing a pronounced improvement over last year. The latest returns of the bureau of statistics show that during September last 286 cars, valued at $373,754, were shipped abroad, together with parts valued at $91,658, while in September a year ago the number of cars exported was 128, valued at $235,607, while the exports of parts were valued at $42,310. The returns for the 9 months ended September show even greater gains, 2,426 cars, valued at $5,481,707, and parts valued at $618,150, having been exported during that period of 1909, as against 1,812 cars, valued at $3,805,509, and parts valued at $477,159, shipped abroad during the 9 months' period of 1908.

The shipments of cars and parts during September last were destined for the following countries: United Kingdom, $105,244; France, $20,132; Germany, $3,109; Italy, $85; other European countries, $15,349; British North America, $216,833; Mexico, $23,185; West Indies and Bermuda, $15,848; South America, $21,488; British East Indies, $1,018; British Australasia, $24,345; other Asia and Oceania, $9,676; Africa, $7,335; all other countries, $1,765.

The import trade is losing ground, according to the latest returns, which show that the number of cars imported dropped from 219, valued at $352,295 in September, 1908, to 150, valued at $291,811 in September last. Imports of parts during these periods likewise dropped from $103,038 to $80,400. During the 9 months' period the imports of cars increased from 956, valued at $1,803,889, in 1908, to 1,208 cars, valued at $2,218,414 in 1909, while the imports of parts increased from $451,469 to $656,371 during these periods. During September last cars were imported from the following countries: United Kingdom, 14, valued at $30,149; France, 74, valued at $153,114; Germany, 7, valued at $15,751; Italy, 44, valued at $65,476; other countries, 11, valued at $24,321.



At Brussels—Police Keep Course Clear at Start

French Makers Favor Road Racing

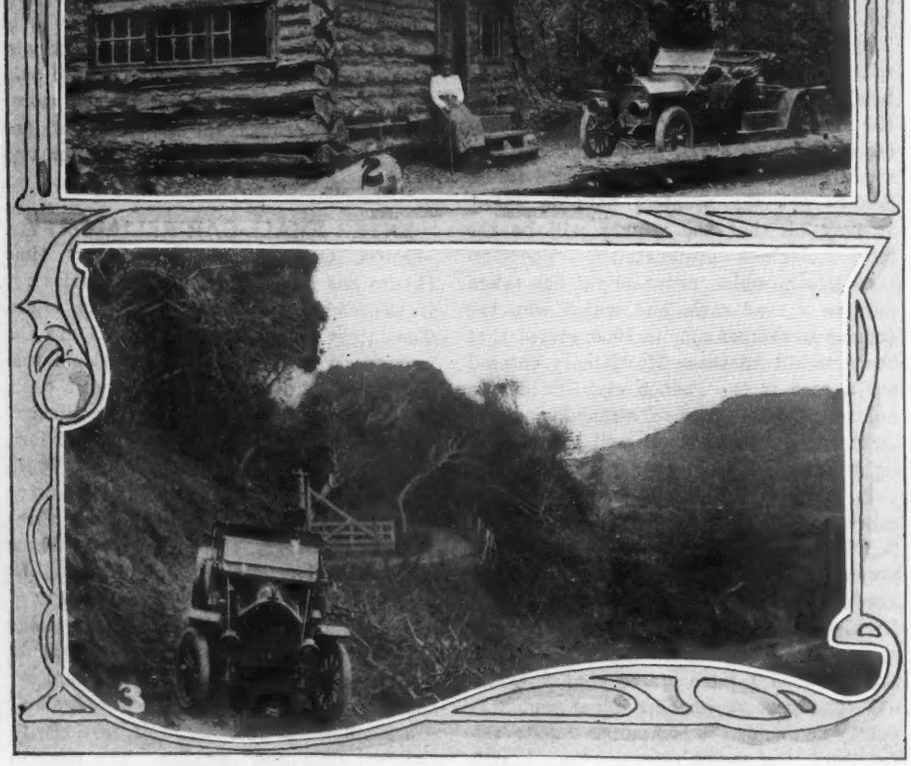
PARIS, Oct. 24—One of the local morning papers has asked the motor car manufacturers at home as well as in foreign countries, to state if they would take part in a road race is one is promoted by the Automobile Club of France. Although the answers are slow coming in they show some interesting facts. There will be some newcomers in the racing game and there will be some absentees among the old-timers. The veteran Lorraine-Dietrich company will not line up. Baron de Turckheim, head of the house, does not seem to like the full liberty idea. "It will lead to the construction of speed monsters," said he, "and everything will be sacrificed in order to get the greatest possible speed. It may be that the winner will be the most audacious constructor." The German Horch, which never as yet has taken part in a road race, and which won the famous Herkomer tour in 1906, stated that there would be three Horch cars entered for a race if the French club decides to hold one. The Gregoire, although making light cars, states that it will enter three light cars with a light chassis and a small bore. De Dion-Bouton, the old French concern, has advised the French club that it will enter three cars should a race be promoted. Another will be Delage, who always has made small cars or voiturettes. In his letter on the subject Mr. Delage says: "Several times since the grand prix of 1908 I have stated that I would not take part in another event which is purely sporting. It is because I hate the monsters, the speed demons, that I said that. Now, however, as the sports committee has decided in favor of the full liberty plan, there is a chance of building a nice car. Therefore I will start three."

Sizaire & Naudin stated that they would be only glad to enter some of their cars provided the event is one in which there is a class which would permit their cars being entered. It has been stated that several old concerns which are now building motors for aeroplanes are strenuously opposed to the road race idea. They hold that the sports of the future will be airship and aeroplane races and that the public will not take a live interest in motor car races because the majority of the old-time drivers are now aviators, or trying to become so.

ENTER SMALL-CAR RELIABILITY

Paris, Oct. 26—At the present time l'Auto has received twenty-six entries for its December voiturette reliability trials. The latest concerns to enter cars are the makers of the Alcyon and Turicum machines, who have entered three cars each. These, with the Delage, Gregoire, Sizaire-Naudin, Corre-La Licorne, Barre de Niort, Doriot-Flandrin-Parant, Hurtu and Fouillaron, make a good field. Quite positive are the organizers that in due time three de Dion-Boutons, three Peugeots, three Werners and several foreign cars will be added to the list. In a sporting journal a contributor writes that he hopes some American cars will be entered, as it would be the means of finding out here in Europe just what the much-talked about American small cars are able to do with the best of French makers. The chances are very slim, though, that American cars will be entered, judging from what an agent said. However, should any makers in the states care to make entries let it be known that the fee is $30 for one car, $56 for two and $80 for three. The entries might be cabled direct to l'Auto.

Motoring in California's Giant Woods



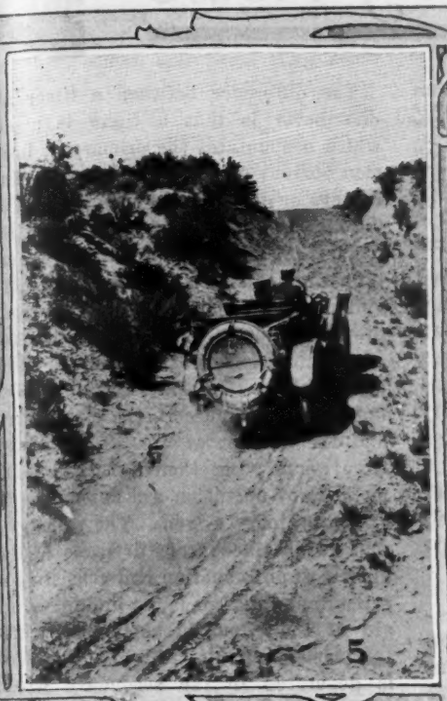
1—A View of the Muir Woods from the Tavern
2—The Keeper's Cabin Is Picturesquely Located
3—One of Entrances to the Sylvan Paradise

4—Redwoods that Rise 100 Feet

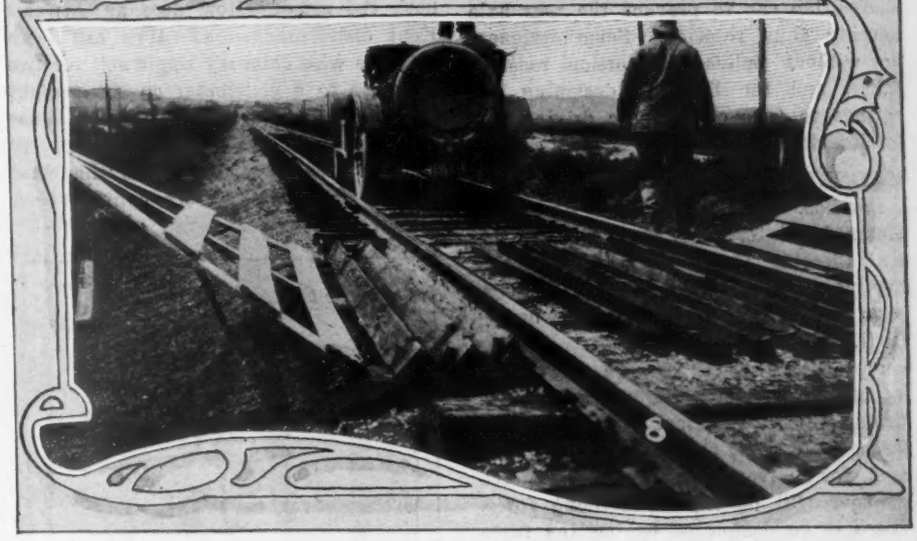
SAN FRANCISCO, Calif., Nov. 2—Tucked away under the westerly edge of Mount Tamalpais, within an hour and a half's run by ferry and motor from San Francisco, is one of the beauty spots of America—and yet so little is it known that even comparatively few San Francisco motorists visit it. It is a grove of giant redwoods, known as the Muir woods, and it belongs to Uncle Sam, having recently been presented to the United States government by the owner, William Kent, of Kentfield, Marin county. It originally was the scene of the annual jinks given by the Bohemian Club, of this city. The majesty of its great redwoods, tall and straight, its inviting fern nooks and its pretty creeks, cannot be surpassed. The grove lies in the Mill Valley country, at the foot of Mount Tamalpais. The summit of the latter affords a magnificent view of the whole San Francisco bay country, and it boasts the crookedest railroad in the world. The ride to the top is one that is taken by every tourist of note that comes to San Francisco, but all make the trip over the steam line, and consequently never catch a glimpse of the beauties of the roadway at the base.

From San Francisco a car crosses the bay on the ferry to Sausalito, and then cuts over the hills by way of Mill valley or by way of Manzanita, over the Bolinas road. About 10 miles from Sausalito the road turns to the right from the Bolinas road and, after following the bed of a creek for half a mile, it leads along the water's banks and through pretty woodland country, a distance of about 3 miles to the grove. Once in the latter, one feels that one has arrived in fairyland. But for the beautiful roads that have been made, there is little to detract from the primeval beauties of the place, which are declared to be wonderful.

Roughing it From Chicago to Frisco



5—Narrow Gulch in California

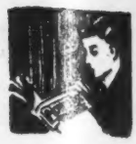


6—Fording One of the Many Western Creeks
7—Carrying Water to Cowboys Near Battle Creek, Wyo.
8—Traveling Over Ties of the Union Pacific

CHICAGO, Nov. 9—Driving from Chicago to San Francisco on a pleasure jaunt, a party of Chicago men made the distance of over 2,800 miles in 19 days and a few hours, traveling only by daylight. The trip was made in a 30-60-horsepower toy tonneau Stearns roadster, owned and driven by George C. Rew, of Chicago. The trip was full of exciting incidents from the moment the party left the Windy City. Mr. Rew and his companions, W. H. Aldrich, Jr., R. A. Luckey and H. G. Tony, were prepared to rough it, and it was a good thing that they were, for on more than one occasion they camped over night in the big Stearns, building a canvas lean-to against the side of the car. Near Battle Mount, Wyoming, the car was pressed into service to carry water to a band of cowboys working on the annual fall round-up. A small barrel of the precious fluid was taken 25 miles across the plains, where there was no semblance of roads. The punchers had noticed the water bags on the car, and a request for aid brought a quick response from the motorists, who by this time realized the value of water in the arid wastes of the West.

Rew and his party went Charles J. Glidden one better in driving on the railroad tracks, for, while the premier tourist of the world used flange wheels and glided smoothly along, the big Stearns was driven over the ties for many miles. Barring the time when the car was driven down the side of an embankment to make way for a fast mail train, the trip along the roadbed was without incident, except for one puncture, the only one on the trip. One of the most interesting incidents of the run was the visit at Buffalo Bill's ranch, near South Platte. The party was royally entertained by the ranch boss, spending the night there.

The Readers' Clearing House



EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

DIFFERENCE IN BEARINGS

MILWAUKEE, Wis.—Editor Motor Age—Will Motor Age kindly explain the difference between annular and roller ball bearings? Is the use of ball bearings for a crankshaft advised? Is it necessary for a shaft-driven car to have radius rods?—A. Bates.

The difference between annular ball bearings and roller bearings is the difference between a ball and a roller. A roller bearing consists of a series of hard steel rollers, each held in place by a pin, which is attached to plates forming a cage. Roller bearings are either cylindrical or taper, and one well-known form consists of a strip of metal rolled into a spiral. Taper or conical rollers are especially adapted for carrying both a radial and thrust-load at the same time. An annular ball bearing consists of a set of balls held between an inner race and an outer race, with sometimes a series of separators between the balls. The balls roll in grooved tracks of circular cross-section, having a slightly larger curvature than the balls, so that they come in contact with the races only at the bottom of the grooves and are therefore of the two-point order. The ball-races are each a complete ring, and when the last ball is pressed into place through a groove in one of the rings, the balls serve to lock the whole together as a complete unit. Some designers recommend ball bearings for crankshafts and they have been used very successfully in a number of cases. Either radius rods or some other mechanical equivalent is necessary on a shaft-drive car to prevent the rear axle housing from rotating. Some designers do without radius-rods, torsion rods or tubes, and the like, by designing the springs to take care of the driving and torsion strains of the rear axle.

MAGNETIZING MAGNETO MAGNETS

Baraboo, Wis.—Editor Motor Age—Will Motor Age inform me, through the Readers' Clearing House, how to magnetize the magnets of magnetos that have become demagnetized by constant use?—C. H. Farnum.

Pass a loop of copper wire around one leg of the permanent magnet, and pass a strong — direct — current of electricity through the wire; the more turns of wire used, for a given strength of current, the stronger will be the magnetizing force. There is no danger of having the force in excess and the thing to do is to subject the magnet to a strong force in this way. The ignition storage battery might serve as the source of current, but a little care should be exercised in short-circuiting the battery. The wire used should be insulated. In using the ignition battery for this purpose, it must be remembered that a permanent connection should not be made between the poles of the battery. When the coil of wire has been wound around the magnet as shown and the soft iron keeper in place, battery should then be short-circuited several times by holding the loose end of wire A in the hand and wiping it across the battery terminal. The resistance to an effort to remove the keeper will indicate the strength of the magnetism absorbed.

CLAIMS KEROSENE RUSTS

Traer, Ia.—Editor Motor Age—Referring to the communication in these columns from L. B. M., Perry, Ia., on "Winter Care for Cars," it is suggested that kerosene be put into the cylinders. This is not good practice, for the kerosene will rust the cylinders when it is left in more than one day. A good idea is to put about a tablespoonful of lubricating oil into each cylinder, if it is an upright engine, and more on a horizontal. This will keep the cylinders in good shape.—H. C. S.

SEVERAL IGNITION PROBLEMS

Cincinnati, O.—Editor Motor Age—Through the Readers' Clearing House will Motor Age explain the difference between a timer and a distributer, or are they both the same? How does an Atwater Kent distributer work? How can I attach the wire from my single coil for two cylinders to a distributer on the engine? It being a high tension current, can I use a distributer? In what proportion to cylinder sizes are mufflers made when used on one, two, four or six cylinders?—A Thankful Subscriber.

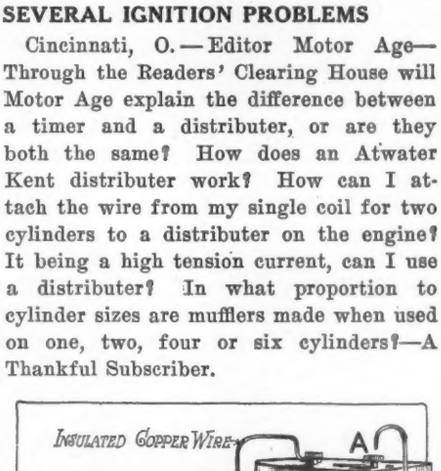


FIG. 1

The difference between a timer and a distributer is that a timer is a device which commutates the primary or low tension current of an ignition system from a battery or generator to the coil; and a distributer is a device for switching the secondary or high-tension current from the induction coil to the spark-plugs in the cylinders of a multi-cylinder motor in proper sequence. Timers also are known as commutators, contact-makers and circuit-breakers. In the Atwater Kent system the induction coil, the circuit-breaker and the distributer are all assembled to form a unit; but their functions and the methods of operation are not unlike those of the ordinary system. The primary current is obtained from dry-cells and conducted to an induction coil consisting of a primary and a secondary winding; with the aid of the circuit-breaker, which breaks the primary circuit, a high-tension current is generated in the secondary winding, which is conducted to the distributer, and from here it is synchronously delivered to the spark-plugs. There are devices on the market, known as distributers, which are a combination distributer and timer; both mechanisms being assembled in a single unit, operated from the same shaft, and thoroughly insulated from each other. This is the device you will need. The secondary wire from your coil should be attached to the high-tension terminal of the distributer-brush; the primary wire from the coil should be connected to the timer terminal of the device, and the ground wire from the coil should be connected to the bed of the motor. There is no set rule for the proportion of the size of the muffler to the cylinders, the efficiency of a muffler depends greatly upon its design.

BRAKES AND THE THROTTLE

Oil City, Pa.—Editor Motor Age—In Motor Age, issue September 30, page 8, there appeared an article on the rubber situation, care of tires, etc. In this article I think the writer goes a little too far in laying the responsibility of the wear on the tires to the driver. The portion of the article which I wish to express my views on reads as follows: "If the driver is reckless and applies the brakes whenever he wishes to reduce speed or stop, instead of making proper use of the throttle for this work, it is natural that his tire expense will be heavy; in fact, very much heavier than it would be with sane driving." For example, let us consider two cars of the same make and design throughout, running side by side at the same rate of speed, say 30 miles per hour. At the same point the brakes of both cars are applied to reduce the speed to 10 miles per hour, both at the same time

and point, one driver using his throttle and shutting off the power, while the other leaves the power on. In the first place, as the two cars are running under equal power, same speed and same conditions, the momentum of each must naturally be the same, and, as the only extra strain or wear that could affect the tires under these circumstances is the checking of the momentum, the damage to both must be the same. I will admit that the driver who did not make proper use of his throttle, but left the power on, had to apply the brakes much harder while checking the momentum of his car, but the extra energy applied to the brakes was spent in checking the power, for, as the tires have no connection whatever between the brakes and the power, the extra energy applied to the brakes could not possibly affect them. I do not wish to impress anyone with the thought that I am in harmony with such practice as applying the brakes while the power is on. Much to the contrary. But I will say this much, that I do believe there are times when such practice—limited—is both economical and advisable. Further than this, I fully agree with the writer's views in stating that fast and reckless driving over rough and frozen roads works havoc to the tires. And not this alone, but you will find that fast driving up steep grades that are rough and stony is very injurious to the rear tires, as in going fast the tires frequently strike some rough place or stone with sufficient force to cause it to bound from the road's surface, and the power which is already applied causes the wheel to gain considerable momentum before it strikes the road again, so when it does strike it will do so in a slipping, jumping manner, often with sufficient force to either tear or loosen a portion of the rubber from the fabric, especially if a sharp stone is encountered.—J. L. B.

DIFFERENCE IN POWER

Arcata, Calif.—Editor Motor Age—Will Motor Age answer the following questions through the Readers' Clearing House: 1. What is the difference in power between a 4 by 4-inch, four-cylinder motor and a 4 by 4½? I have been given to understand that with higher speed in the shorter stroke motor as much power will be developed as in the longer stroke running at a slower speed, which is usually the case. 2. On account of the stroke being ½ inch longer with the same bore, making the piston travel farther, does that increase the power to any noticeable extent? I have even seen standard cars with a shorter stroke than bore. Some people seem to lay much stress on a car with a ½-inch longer stroke having so much more power, especially in the many 4-inch diameter cars now on the market.—J. C.

In any motor, under given conditions of design, the power is in direct proportion to the stroke, at a constant mean effective pressure. There is no reason why the mean effective pressure would change within the limits of stroke as stated by you, and so it is a fair inference that the power would increase in the ratio of 4 to 4½. On the other hand, if the piston speed is held the same in both motors, and if the mean effective pressure is constant, it is then quite plain that the power will be the same —approximately—in both motors. The trouble with this example is that the differences are not enough to make a discussion worth while.

THREE-PORT ENGINE POWER

Princeton, Ill.—Editor Motor Age—I have just completed the design of a two-cylinder, two cycle, three-port engine, with cylinder sizes 5 by 4½. What power should I get from the engine at about 1,000 revolutions per minute? The inlet is 1 inch, the exhaust 1½, size of transfer port 2¼ by ⅜, exhaust port 2½ by ⅝. Will lubricating oil mixed with gasoline lubricate the piston and cylinders satisfactorily?—E. A. Frank.

About 25 horsepower. Lubricating oil mixed with gasoline seems to work very satisfactorily on engines of the type you mention, and this method of lubrication has been widely adopted by launch owners in certain localities.

FOUR-CYLINDER PREFERABLE

Moline, Ill.—Editor Motor Age—I have decided to build a three-cylinder, four-cycle, valve-in-the-head type of gasoline engine which has the following dimensions: Bore, 6 inches; stroke, 6½ inches; compression chamber, 2 inches; size of crank, 2½ inches; drop forged or Bessemer steel flywheel, 24 inches in diameter; center web rim, 3 inches thick; face, 5 inches; valve, 2 inches, with 7.16 lift; carbureter, 1½ inches, and jump spark ignition system. How many pounds spring will it require for the exhaust valve and how many pounds on the intake? How many revolutions would the engine run under a normal load, also what horsepower should it produce? Will Motor Age kindly let me know wherein I have made mistakes and what points should be corrected? There is room in the head for a large valve, if necessary. Can both valves be of the same size?—August Johnson.

The three-cylinder, four-cycle motor will not be very popular, due to lack of good secondary balance of the crankshaft; a four-cylinder motor will perform in a more satisfactory way. The flywheel may be of cast gray iron, limiting the diameter to that which, in view of the maximum speed of the motor, will produce a peripheral velocity of 5,280 feet per minute. The web of the flywheel will not have to be more than 5-8 inches thick. The exhaust valve spring should be about 2 inches in diameter, of eight to ten turns, and the size of the steel wire should be such that a pressure of 45 pounds will be exerted. The inlet valve spring may be of the same diameter, but the pressure may be about 35 pounds. The chances are that the spring will not be so much effected by heat and will hold to its original strength. As to the power of the motor, it will be below a fitting standard if built according to the specifications given by you.

ITEMIZES HIS EXPENSES

Milwaukee, Wis.—Editor Motor Age—Previous to November, 1908, I had been making use of a horse and buggy to assist me in my work as city salesman of a local jobbing house. The outfit was not my own, but was rented from a nearby livery at a fixed rate of $2 per day. I was out 4 days in the week, from 8 to 5, for 8 months in the year, in all kinds of weather and over all kinds of roads. My total expense for this service ran close on to $250 annually for 2,400 miles traveling, or an average of about 1 cent per mile. Sundays and evenings I never used the rig. Believing I could get around faster, call on more trade and oftener, and thereby increase my sales, by the use of a motor car, I purchased a second-hand one-cylinder runabout of standard make and in apparently good order. I put this car into active service November 1, 1908, and I have kept accurate account of every cent I spent on the car since that time, and it may interest some readers of Motor Age to note the figures and make comparisons:

Total cost of maintenance from November 1, 1908, to November 1, 1909....	$282.31
Miles traveled during this period, 3,140. Cost per mile, 9/10 of a cent.	
Cost per day for 284 days of actual running, including evenings and Sundays.	1.00
Individual items of expense—General repairs and adjustments, not including tires	124.40
Tire expense, including purchase of two new casings, one inner tube and repairs	48.53
Fuel, 287 gallons of gasoline	37.87
Lubrication, 16 gallons of oil, 2 pounds of cup grease	9.95
Ignition, including maintenance of storage battery and reserve dry cells	12.45
Illumination, including purchase of gas tank, recharges and maintenance of generator	25.16
Supplies and accessories, including new tools, covers, sponge, chains, etc	24.35
	$566.02

In the above statement I have not figured in depreciation on the car or interest on the money invested. Neither have I mentioned any garage rental, keeping the car in my own barn in the rear of my residence, nor of the many hours I spent cleaning, oiling and adjusting the car to keep it in good running order. That would probably raise the expense limit considerably. But, nevertheless, I am well satisfied with the change and would not go back to the old method of locomotion for any consideration. As anticipated, I have been able to call on a good many more people in the same amount of time that I formerly did with the horse and buggy, and I feel myself amply repaid for all my trouble and expense in the increased amount of sales that I have been able to make, and not to overlook the convenience and comfort of a Sunday's or evening's pleasure ride I have been able to offer my family for but little expense.—City Salesman.

A Study of a Two-Cycle Car Design

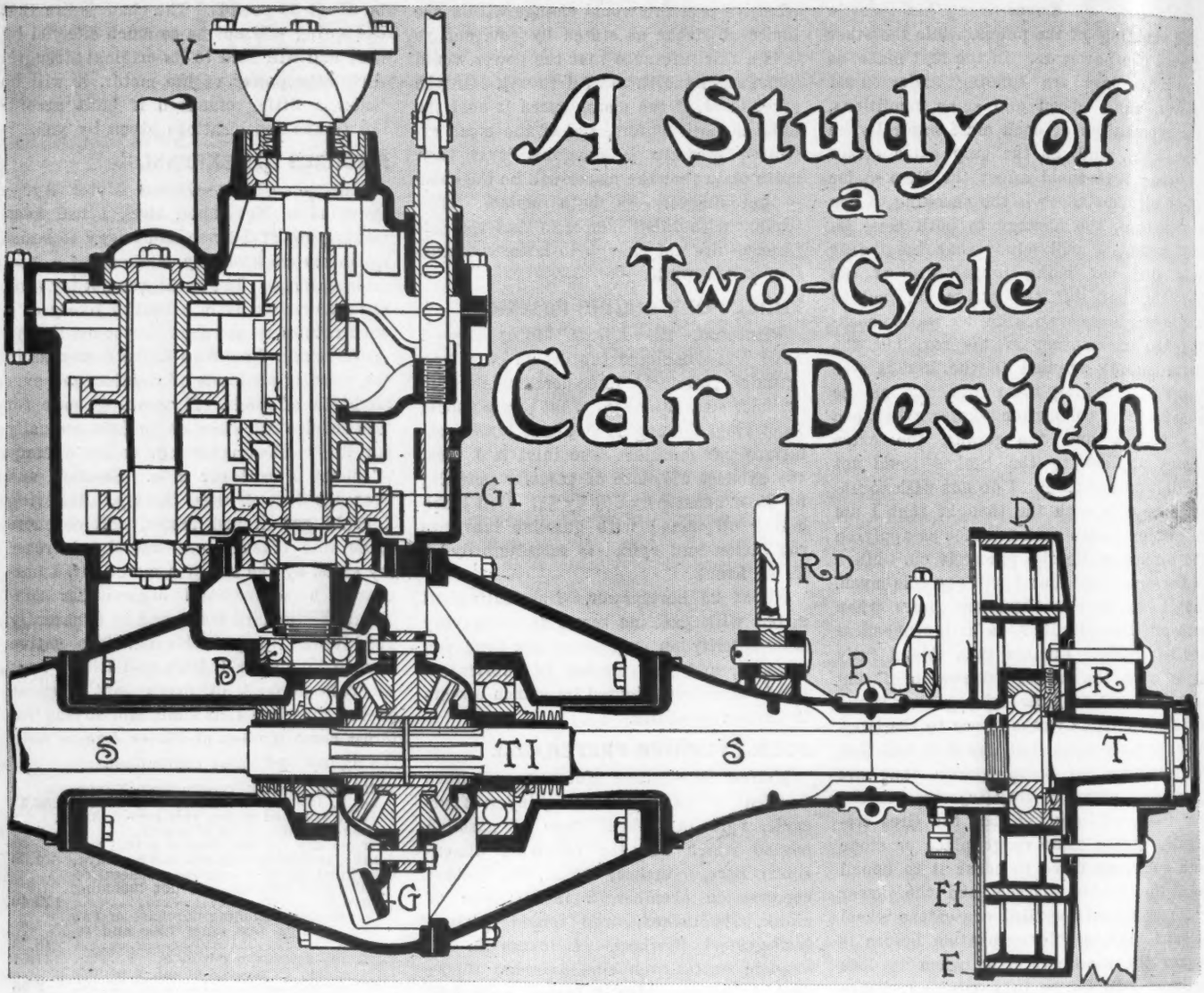


FIG. 1—COMBINED REAR AXLE AND GEARSET ON SIMPLEX TWO-CYCLE CAR

DIFFERENTIATING between the fullest measure of success and a scant existence, so to speak, is attended by difficulties on occasions, due to a similarity of features and lack of exact knowledge. In discussing the two-cycle motor as it is used in motor car work this problem in differentiation becomes acute and the only way, perhaps, to ascertain the bottom facts is to show what has been done rather than to rant about favorable theories, which seems to have been the general practice in times gone by.

It was but a few years ago that designers were wont to claim that none but the electric vehicles ever would reach a high level, and all forms of internal combustion motors were looked upon as far too complicated to be placed in the hands of average users of vehicles to use for transportation purposes. Fortunately men who do things declined to be led by the nose, and they went right on experimenting with internal combustion motors, with the result that the success of the electric type of car was no more than assured when the gasoline type of car entered the race for popular favor.

The four-cycle type of motor offered the least resistance and it reached a high state of perfection first. This in spite of the added mechanical complication, which goes to show that it was not a question of mechanics at all, and as might have been expected it was easier to assure a competent firing charge in a four-cycle motor for the very reason that the mechanical displacement of the burnt charge is the surest way to arrive at a state of perfect scavenging.

This easy gain was a fortunate circumstance, considering the class of men who want dividends on efforts at once; but it was no proof of lack of ability of the two-cycle motor. As a matter of fact the very class of men who jumped to the conclusion that only the electric would serve in the long run repeated their short-sighted dictum when the four-cycle motor fought its way to recognition, and now that the two-cycle motor is commanding respect these prognosticators will again have to bow to the type of man who works and struggles; the courage of sound conviction being the incentive.

Strange to relate, the three-port type of motor, which is mechanically the most simple of all, offered the greatest resistance, thus again showning that mechanical problems were the least troublesome, and that the designer had to cope with many problems, the nature of which were thermodynamic and to a vast extent speculative. When a car as a whole fails the question is what part of the car is responsible for the failure? Is it the motor, clutch, transmission, axles, wheels, tires, or does each unit contribute a quota? In the past it frequently happened that failure was due to lack of ability of the structure as a whole; each element contributed a share of the trouble, and the owner of the car, not knowing where to center responsibility, charged the whole of the failure to some one part, and why not the motor, especially if it differed from the general run of motors?

Discrimination Necessary

In this way many of the earlier four-cycle failures, so called, were charged to the motor, when the chassis would not properly serve, even with electrical equipment for the motive power, and later on, when two-cycle efforts were made, it did

not occur to anyone to ascertain if the trouble was not due to inferior chassis construction rather than for want of a good motor. These failures to discriminate as between the sources of trouble resulted in placing all of it on the relatively new unit, as the two-cycle motor, and delayed recognition of undoubted quality was a natural sequence.

All the earlier applications of the two-cycle principle were in connection with boat propulsion, and single-cylinder motors were used in almost every case. In the single-cylinder type of motor it was not difficult to render the crankcase tight and the primary compression which took place therein was not difficult of attainment. The little motors were so simple and they worked so well that thousands of them were designed and constructed, but unfortunately the class of workmanship was generally below a fitting standard, and when this class of work was put into multi-cylinder motors for use in motor cars the motors failed simply because they were mechanically incapable of sustaining in the more difficult service.

There is no doubt about the abstract ability of a steam engine, and yet were many of the steam engines now being built mounted on the frame of a locomotive they would fail in service. This illustration is apropos. Failure, when it is encountered, may be due to a mal-application of a principle rather than to the principle.

Three-Port Two-Cycle Motor

The three-port type of two-cycle motor is absolutely valveless; the mixture enters the crankcase through a third port; it is there compressed by the descending piston just as in the two-port type of two-cycle motor; and in both types of two-cycle motors every descending stroke of every piston—referring to a critical type of motor—is a power stroke. This cycle relation must be appreciated to understand the reason for desiring to adopt the two-cycle principle; in a four-cycle motor every second downward stroke is a power stroke. It will be understood then that a two-cycle motor with either two or three ports is designed to deliver twice as many power strokes per cylinder per thousand revolutions of the crankshaft as can be realized from a four-cycle motor of the same number of cylinders. Obviously with the same bore and stroke of cylinder and piston, respectively, if the mean effective pressure can be made the same in the two-cycle as it is in the four-cycle type of motor the power which can be delivered from the two-cycle motor will be double that of the other per thousand revolutions of the crankshaft in common time. It never has been shown that the two-cycle type of motor is capable of delivering double the power realized from its cousin, the four; the mean effective pressure is not the same in both, and it is even a question if some of the inferior designs of two-cycle motors are capable of delivering as much power as is usually realized from average designs of four-cycle motors.

Simplex a Two-Cycle Example

Taking the motor as made at the plant of the Simplex Motor Car Co., Mishawaka, Ind., as an example, it will be possible to discuss the subject further, and with this concrete example at hand, determine with far greater certainty the facts and the trend.

An intelligent discussion of the merits of the valveless two-cycle motor will not be possible unless it can first be shown that the chassis and the remaining units are competent, free from trouble, and by a system of elimination, bring all troubles home to the motor, if such there are. Since the live rear axle and the transmission are important members, capable of inducing a deal of trouble if they are not rightly made, it is proposed to present reproductions of working drawings and show that trouble from this source is a remote contingency. Fig. 1 shows the rear axle section. The live shaft floats on Hess-Bright ball bearings; the hub of the wheel is drawn up on a taper T, and the termination TT in the differential gear, for each shaft, is enlarged and fluted, thus assuring competence and ease of assembling. The wheel is prevented from floating off by the closure ring R of the large annular type bearing, just inside of the hub of the wheel on each side, nested within the drum of the brakes. The brake-drums D bolted to the hub-flanges, are provided with mud excluders, and each set of brakes is provided with individual flanges, F and F1, both sets being of the expanding type. The spring perches P rotate on bearings, hence there is no binding tendency when the springs deflect; and inside of the springs, at a point of vantage, the radius rods RD are anchored. They are nickel steel tubing and the bearings at the anchorage are provided with ample surface.

The differential gears are of the bevel type, made of special—low metalloid—15-carbon steel, cemented and hardened. The differential gears and housing are provided with liberal bearings, and the bevel drive, the gear G of which is bolted to the housing, is of liberal proportions, with annual ball bearings at every point, including an outboard bearing B for the pinion. Closure rings, with three grooves, prevent the lubricant from working out and the silt of the road is debarred from entering.

The aluminum housing for the transmission gears engages the housing of the live rear axle in such a way as to form an integral part thereof, and the short drive and lay shafts, of liberal diameter, are suspended in annular ball bearings. The direct drive is worked out in a manner to be commended, twenty-four-tooth internal gear GI being used for the purpose, and a No. 406 Hess-Bright ball bearing is placed at the end of the shaft, within the gear, to take the lead.

The materials used are of the best obtainable in alloy steel, no attempt is made to stint the quantity, and some are so bold as to say that the apparent liberal use of such fine material is not justified on the ground that although the parts will not deform or fracture the weight will interfere with good road performance and tires will suffer. The writer, after testing the car under severe conditions, reaches the conclusion that the weight is not excessive in view of its disposition, and it cannot be shown that tire bills will be excessive when a reasonable addition of weight is made below the springs. At all events the aim here is to eliminate every source of trouble possible in order to be able to discuss the performance of the motor without being able to claim that any trouble found in it—if such there is—is due to ills of the chassis.

Front Axle Is Standard

From Figs. 2 and 3 of the front axle it will be observed that this axle of I section is forged in one piece, with the knuckles also die forgings of special steel,

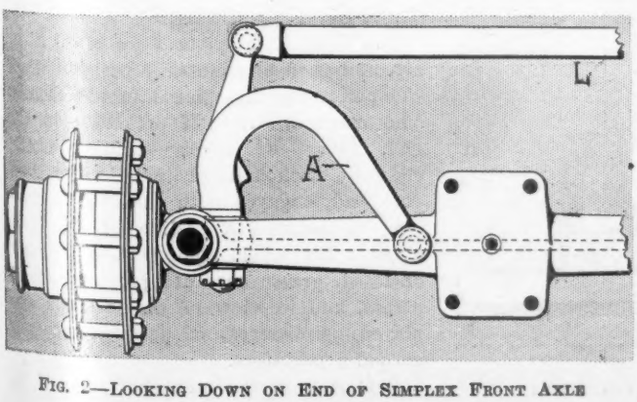


FIG. 2—LOOKING DOWN ON END OF SIMPLEX FRONT AXLE

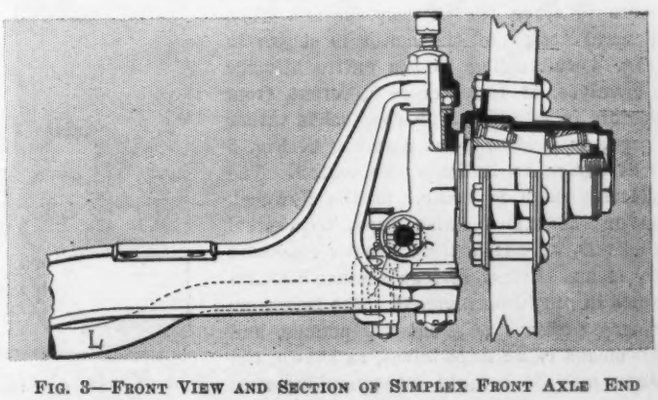


FIG. 3—FRONT VIEW AND SECTION OF SIMPLEX FRONT AXLE END

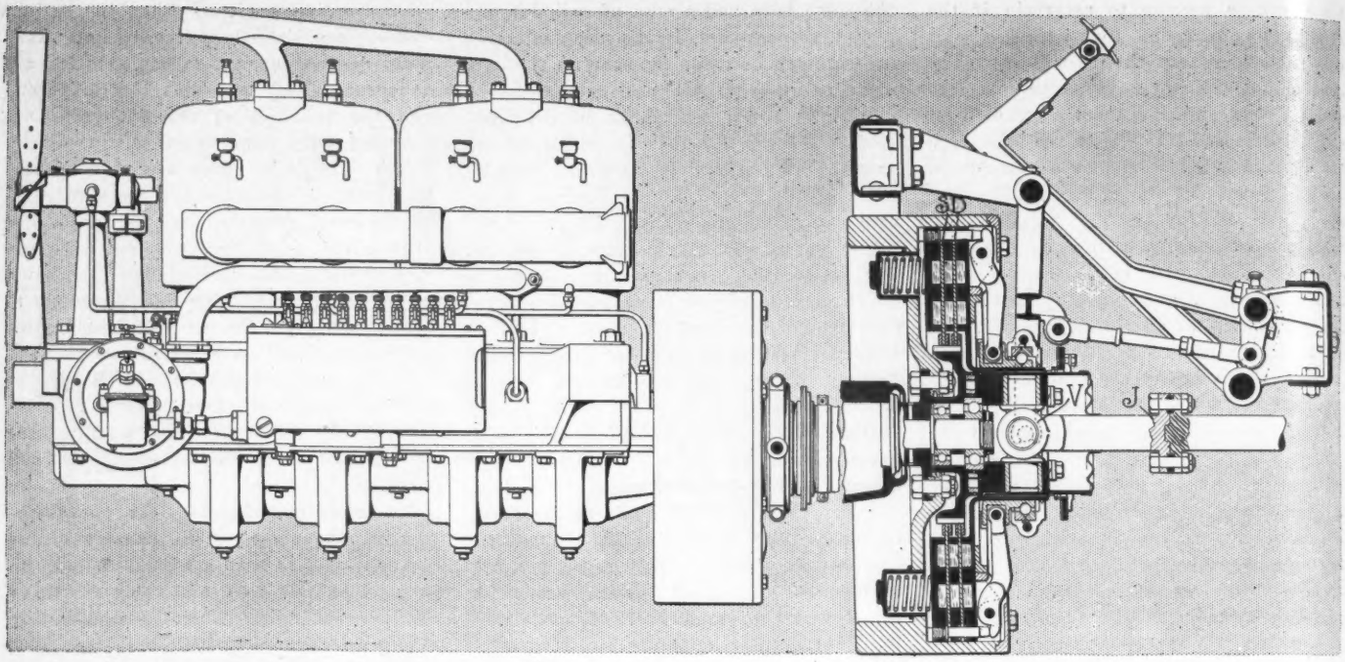


FIG. 4—SIMPLEX 5 BY 5-INCH TWO-CYCLE MOTOR

FIG. 5—SIMPLEX MULTIPLE-DISK CLUTCH

annealed, and accurately machined. The knuckles are long, provided with liberal bearings, and the thrust is taken on a ball bearing at the top. Timken roller bearings are used in the front road wheels, it being the desire to thus provide for thrust. The steering links L are of nickel steel tubing, and balls, for ball-and-socket joints, are large, securely placed and adjustable. The steering arm A attaches to the knuckle in a secure and proper manner, and the shape is such that the links are nested above and to the rear, where they are out of harm's way.

The chassis frame is 5 by 2 by $\frac{3}{16}$ inches, of a special selection of material, and affords a wealth of rigidity for the intended purpose. Despite this ample frame the machinery is securely mounted and universal joints are placed to take the effect of road inequalities at every point, one of which is shown at V in Fig. 1.

Discussion of Motor

Any further discussion of the motor will be with the understanding that it is not required to shoulder the blame of an incompetent chassis, and under such conditions if it fails to perform in a satisfactory manner—which, however, has not been shown—it is the motor that will have to serve for the explanation. The general design of the motor is shown in Fig. 4 and owing to the entire absence of valves, it looks quite different from motors in general. The flywheel is rather large, as it shows, but glancing at Fig. 5 will suffice to indicate the reason. The clutch, which is housed in the flywheel, is of the multiple-disk type, with steel disks D, of which there are two, pressed by means of four springs against cork inserts in gray iron plates S. The maximum spring pressure is about 200 pounds, and by means of an adjustment, as shown, the disks may be brought into more intimate relation if perchance wear creeps in. A universal joint V is placed within a shell, in front of an assembling joint J in the shaft, and a distance rod takes all pressure when the pedal is pressed to relieve the clutch. The whole clutch mechanism is housed in the flywheel and the face width of the same is more than usual on this account, although the actual weight of the flywheel is well within the realm of good practice.

Fan at Front End

At the front end of the motor the fan, Fig. 6, used to draw cool air through the radiator is fashioned in conjunction with a pedestal, which also serves to house the fanshaft FS which engages a lateral shaft LS, through a spiral gear, thus eliminating the belt as ordinarily used to drive the fan. The fan rotates on ball bearings, is placed horizontal and a bevel drive makes the right-angled transmission. The starting crank emerges from the casing and the driving jaws JI are enclosed in the housing. The crank is broken off, but the detail is sufficiently clear to indicate a wealth of care in the designing, and that the two-cycle principle is not harassed at this end of the motor. The plunger P holds the crank in when engaged and also holds it out when out of engagement, as illustrated.

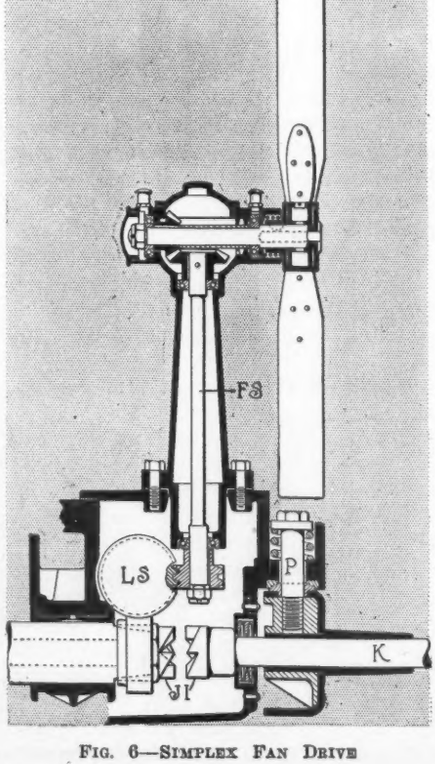


FIG. 6—SIMPLEX FAN DRIVE

Glancing at Fig. 8 the cross shaft SI previously referred to will be seen and the accessories are driven through this shaft, which takes its rotative motion from the crankshaft by means of a spiral gear system SG with one member keyed on to the crankshaft as indicated. The water circulation pump WP is of the centrifugal type and its shaft passes in through the wall of the housing and engages a safety—flexible—joint, through which the power is obtained.

Timer Bevel-Gear Driven

The timer T is driven by a bevel gear-set, and is in an accessible position when the power plant is placed in the chassis. The magneto drive M is shown to the left, and a sliding—floating—shaft, equipped with a bevel drive at the magneto end, engages with the spark-advancing mechanism, a section of which is given. The whole equipment is suitably enclosed, grease cups are provided at all points, and in view of the methods employed noiselessness of performance is a normal expectation.

Referring to the crankshaft, Fig. 7, it

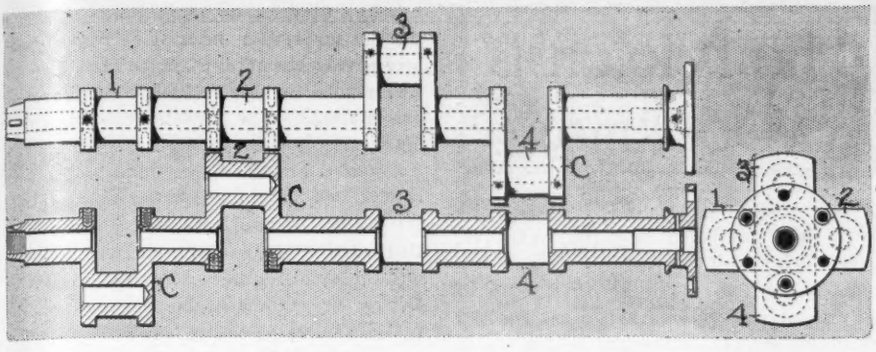


FIG. 7—SIMPLEX CRANKSHAFT WITH 90-DEGREE THROWS

is relatively light, is drilled out with ⅞-inch holes, and has an outside diameter of 2 inches. The cheeks C are quite thin, 1/16-inch, and the arrangement of the cranks is that of a pair of two-cylinder crankshafts—rotated 180 degrees—with an angular displacement of 90 degrees between the two pairs. The firing order is 1-3-2-4, and in view of the unbalanced arrangement of the cranks balancing disks are placed over the throws. The throws are marked 1, 2, 3 and 4 to show their 90-degree setting. The use of balancing weights may seem to be disadvantageous, but it must be remembered that the crankcase compression must be maintained as high as possible, about 7 pounds in this motor, and the weights are used to fill up the crankcase, as well as to balance the crankshaft, it being the experience that the crankshaft is not sufficiently out of balance to give any trouble at all at the best power speed of the motor.

The crankcase compression is brought up to the high point named by having the space quite completely filled, and tightness, which is difficult to obtain, is brought about in this motor by means of split mitered packing rings, with springs behind them. Since they are ground and press against ground faces of the cheeks of the crankshaft they are not only tight but experience has shown that they will stay so, even for several years.

Bearing Surface for Packing Rings

To afford bearing surface for the packing rings the cheeks of the crankshaft are made thin and wide, and in view of the continuous but relatively smooth series of twisting moments afforded by the motor the crankshaft as designed serves the purpose perfectly, and of the considerable number now in use a failure is as yet to be recorded. In this crankshaft construction is to be found a large part of the success of the motor; it long has been known that two-cycle motors can be made to work if the crankcase compression is maintained, first, at or near 7 pounds per square inch; second, the same in every chamber of the crankcase, and, third, despite the inroads of long-continued service.

The A. L. A. M. rating for a 5 by 5-inch, bore and stroke respectively, four-cylinder water-cooled four-cycle motor is determined as follows:

$$\text{Horsepower} = \frac{d^2N}{2.5} = \frac{5^2 \times 4}{2.5} = 40$$

The above is about all that can be expected from a motor of the conventional order, and taking the average motor it is too much to say that all will do so well. The two-cycle motor, as here described, claims the distinction of delivering—under the same conditions of test—between 50 and 65-horsepower; it is better to consider a range of the delivery figure perhaps than to state the maximum.

All that has been shown so far is that the design is on a high plane, the workmanship is that of a well-equipped shop, and a single well-directed corps of engineers has the whole situation in hand. There must be some other reason for the good work done.

High Compression of Cylinders

One of the points to be taken cognizance of is the high compression of the cylinders, it being about 90 pounds per square inch, absolute, and all the cylinders are ground, even over the domes, which are flat, in order to assure equality of compression in the respective cylinders. Then the pistons are provided with deflectors that could only have been arrived at after much experimenting. The ports, of which there are four for the inlet and exhaust, are wide, and about 1¼-inch in depth, and the radius of the deflector, as it sweeps away from the cylinder wall is about 1½-inch. Between each port there is a baffle fin on the deflector, the function of which is to prevent the incoming mixture from sneaking around over the surface of the piston head and mingling with the escaping exhaust. The baffle is on the inlet side and the exhaust ports are about half of the depth of the inlet ports, wider, so that the exhaust opens early and the terminal pressure is very much reduced when the inlet ports are uncovered by the piston.

The inertia of the exhaust under the given conditions of escape is sufficient to

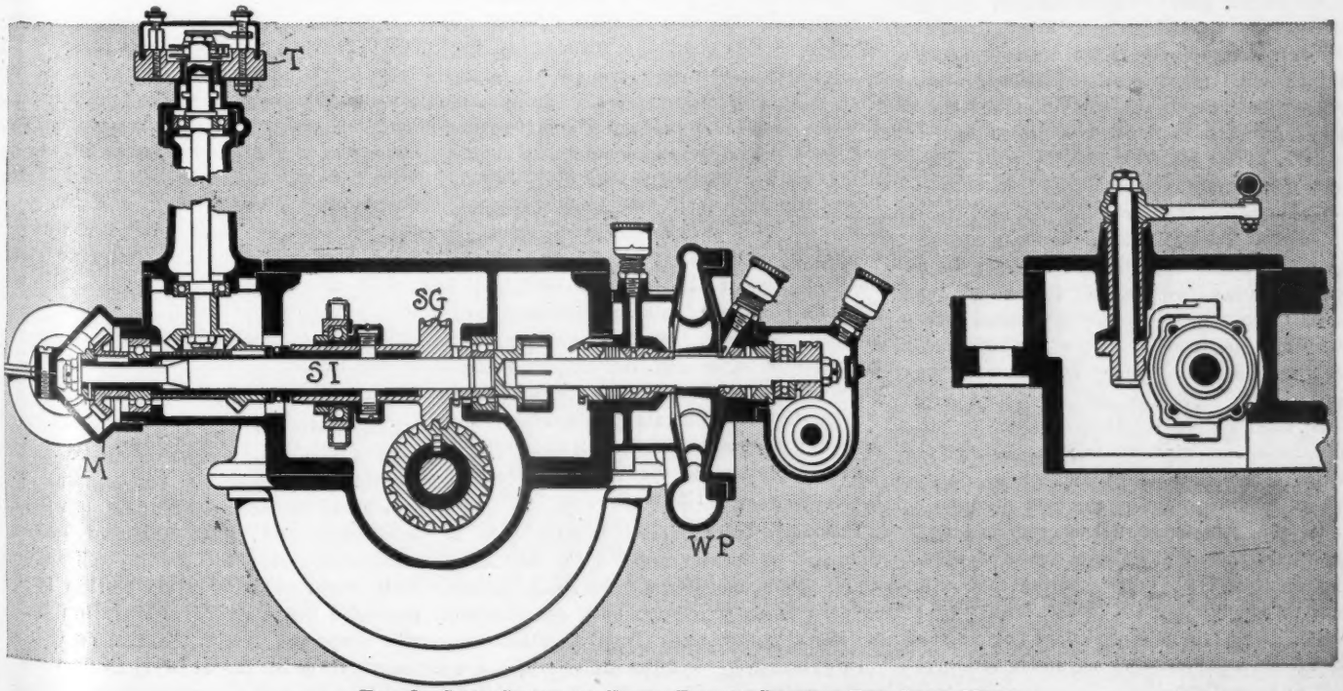


FIG. 8—CROSS-SHAFT ON FRONT END OF SIMPLEX TWO-CYCLE MOTOR

prevent crankcase fouling, and the bridges between the exhaust ports are water-cooled. The piston rings are about of the same dimensions as those used in good water-cooled motors of the four-cycle type, and it has been determined that they are less likely to fall into the ports than they would be were they as wide as the ports. The bridges serve to guide the rings by the ports, and it cannot be discovered that there is any trouble attached to this detail. The transfer ports are much restricted, it being a matter of skill to fix upon the minimum possible cubical volume of them; any excess would serve as a detriment, since the crankcase compression would be reduced thereby.

Making Mixture Inflammable

The idea involved in maintaining a high compression is to make the mixture as inflammable as possible, taking into account the possibility of incomplete scavenging, due to the short time the gas has to pass out, especially when the speed of the motor is high, it having been determined that even 1,800 revolutions per minute is well within the range of practice. Even if the mixture is contaminated, if the compression is increased to match it will burn readily, and to add to this assurance the spark is so contrived that it may be advanced as much as 60 degrees; in four-cycle work the spark is rarely advanced more than 38 degrees. In order to be able to advance the spark fully 60 degrees the mechanism, as illustrated, was contrived, and it offers the advantage of bringing the armature of the magneto in the position of maximum energy at all points in the range of advance.

Instead of following in the beaten path of four-cycle designers, if success is to reward two-cycle efforts, it seems to be necessary to depart from them sufficiently to satisfy a series of modifications of the laws which govern the situation, among which the following is a brief resume: The crankcase compression must be maintained with great precision between the respective chambers; the cylinder compression must be high enough to assure that even an inferior mixture will ignite and burn with sufficient speed to deliver its energy to the receding piston before it reaches the end of the stroke; the ignition system must be contrived with a considerable increase of the range of spark advance in order to ignite slow-burning mixtures in time to take advantage of the energy component; the carbureter, especially in three-port motors, must be particularly capable, and in the case in point it was necesasry to utilize the automatic principle, with divers modifications of common practice.

In the meantime with a well-designed and constructed chassis, capable of serving with any kind of a motor that will deliver enough power, it has been found that a two-cycle motor without any valves at all is capable of doing work reliably, and to advantage.

"The Woman and the Car," by Dorothy Levitt and published by John Lane Co., New York, is of special interest to the feminine world, containing as it does in story form instructions and hints for the would-be woman motorist. This little handbook is not a hyper-technical treatise, but just a heart-to-heart talk, the technical details being sufficiently simple and comprehensive so that even the most obtuse can understand the intricacies of a motor car. The facts related and instructions given are gathered from the author's 6 years of daily experience with various types of cars, in all kinds of climatic conditions, and in all kinds of tours and competitions. Miss Levitt is described, in an introductory sketch by C. Byng-Hall, as being an attractive, slight, timid little person, retaining all the womanly traits of character, yet possessing that innate mechanical insight which constitutes the making of a skillful motorist. In the opening chapter the author discusses the car, recommending as the ideal car for a woman the single-cylinder type, in that it is the most simple for a woman to drive and care for. A good bit of sound advice is offered to the would-be woman motorist, resulting from her many years of experience in driving, is not to permit anyone to drive your car. Certainly a most important factor to be considered, knowing only as its driver can all the little throbs and eccentricities of the engine! Then follows a talk on the various details of the machinery, lubrication, brake testing, the levers and their functions, and the battery system. Under the chapter "How to Drive" is discussed the starting of the engine, speeds and gears, the use of pedals, etc. A chapter is devoted to "Troubles—How to Avoid and to Mend Them," covering such difficulties as sooted and faulty plugs, choked carbureter, sticking valves, loose terminals, etc. Clothing, expenses, manners, tips, etc., are in turn all thoroughly gone into, and at the end of the book is given the index marks used in the United Kingdom, and a dictionary of mechanical terms. Miss Levitt in a very simple yet convincing manner proves that any woman can readily understand and master the mechanical details of an engine and become a successful and skillful operator of a motor car. Several illustrations accompany the text.

"Motor Trips from London at a Glance," from the press of T. M. Middleton & Co., London, a 5 by 7 size paper-covered book, consisting of a compilation of short motor trips from London—the return being by a different course—is a useful volume for European tourists. The mileage between adjacent towns is shown on the maps, the descriptive pages opposite giving the total distance from London and return as well as mentioning some of the historic spots passed. The trips outlined are of varied lengths, some only a 3-hour's trip, some ½-day trips, still others from 1 to 3 days' duration, and those desiring to make more extended journeys can find such routes clearly outlined. Week-end trips to the seaside, as also routes to the racing parks near London are included in this compact little pocket-size guide book.

"The Best Way Out of London," edited by Lord Montague and published by the Car Illustrated, Ltd., is a 7½ by 4½ red cloth-covered guide book, a particularly valuable and helpful little volume for the tourist who expects to spend some time motoring in England or around London, containing as it does many routes out of London, the text being supplemented by thirty-five maps. In order to avoid as much as possible the many tram lines, Piccadilly circus has been selected as the starting point, the book showing how the main roads can be quite conveniently reached, although the most direct route is not always chosen owing to the tram lines and many other causes which makes the more direct one not the most desirable or suitable. The book is divided into three sub-divisions—"The Best Ways Out of London," "The Best Ways to Avoid London," and "The Worst Hills in England." Under the first are given directions to the Great North road, Brighton road, Portsmouth road, western exits, Dover road to the Crystal palace, and from the Crystal palace to the Sevenoaks road, to the Worthington road, and eastern exits. Tourists wishing to avoid the intricacies and tram lines of "London and 12 miles round" will find the sub-division on the "Best Way to Avoid London" most helpful, it showing what entrances into the city from the different directions to avoid. The division entitled "The Worst Hills in England," together with diagrams, covers hills suitable for high-powered cars as well as hills more suited to the small car. These descriptions show the nature of the road, the per cent of grade, etc. Some of the hills mentioned are the Broughton hill, one of the test hills of England, also the Gorcott hill which has been the scene of hill-climbs conducted by the Midland Automobile Club.

A most commendable book, not only for its authoritativeness, completeness, lucidness and attractiveness is "The Motor Routes of England," southern section, which has been compiled by Gordon Home, published by A. & C. Black, of London, and in America by the Macmillan Co., New York. This southern edition is the first of a series now in preparation which will cover the united kingdom as well as many routes on the continent. The western, eastern and southern sections will be

covered in as many volumes, Scotland will comprise another volume, Ireland still another, and two others will be devoted to France, all of which, when published, if up to the standard of the first volume, will make a most valuable adjunct to any motorist's library. Mr. Home, in a 40-horsepower car, has recently motored over the entire distance, so that the information as to up-to-dateness and accuracy can be relied upon. Though a high-powered machine was used on this pathfinding trip, it is claimed that all of the hills, with only one or two exceptions, can be easily negotiated by the small car. Due credit has been given to the secretary of the touring department of the Royal Automobile Club, who gave the author much valuable touring information. At the beginning of each section, distances from town to town are given, warnings as to steep grades and other road conditions, and a summary of the places of interest. The beauty spots and historical places on the highways and byways of old historic England are briefly yet interestingly described, and the table showing the kings and queens of England since Alfred the Great down to the present sovereign, the events in connection with each reign, and the styles of architecture from the pre-Norman to the Victorian will be appreciated by the motorist. Twenty-four most beautiful illustrations in colors enhance the value of the book—here an idyllic spot in the motherland, here an historic inn, abbey or cathedral, here a typical pastoral scene. Besides these are thirty-eight maps and plans, together with a larger map showing the entire distance covered by the volume.

"America's Motherland," by T. W. D. Smith and published by T. M. Middleton & Co., London, is a 4½ by 7 size little handbook covering the historic sites and scenes in and around London. This volume is not a motorists' route book, but to the motorist intellectually and historically inclined, touring England from an educational standpoint and having the time and inclination to linger in the hallowed spots, this book of short historical sketches of the famous places and the great men whose lives are so closely interwoven with them, will prove of inestimable value. Westminster Abbey, the home of Carlyle, Hampton Court, the British museum, the national gallery and houses of parliament are a few of the many places of interest in London to the student of history which are described. Stratford-on-Avon, the birthplace and home of Shakespeare—the mecca of all literary pilgrims—is graphically described, and it is here in this quaint little town on the river Avon that we find the Harvard house which was recently purchased by Edward Morris, a Chicago man, and presented to the Harvard university. Byron's country, made famous by the exploits of Robin Hood and "the merry pranks he played" receives attention, and the ancestral home of Washington is not overlooked.

Manufacturers' Communications

PREVENTING COIL SUBSTITUTION

Anderson, Ind.—Editor Motor Age—Our attention has been called to the editorial in Motor Age, issue October 14, entitled "Substitution in Coil Parts," and we wish to say we have had an opportunity to observe a number of cases where substitute parts for our magnetos have been sold, particularly the platinum-pointed adjusting screws and springs. Most of these cases have been brought to our attention by the users who have purchased the substitute parts and being unable to get the desired results, had to call upon us for new parts. In some cases they would submit to us the parts which they had bought and which had been represented to them as being platinum-pointed screws and springs that were furnished by us. We have known of cases where certain parties advertised platinum-pointed adjusting screws and springs for magnetos and coils at prices so ridiculous that it would have been an easy matter for anyone at all familiar with the platinum market to know that the platinum which was used in these points would cost considerable more than the price they were asking for the complete part. We noticed in the editorial it was suggested two different ways of stopping this substitution, and while either one of these ways might help considerably in the way of curing this evil, it is a fact that the party making the substitute parts, also could stamp the name upon the part, and in the latter it is many times easy to deceive the consumer who is buying this part on account of his not being familiar with the different materials and being able to detect the good from the bad, or to detect one from the other. It would appear to the writer that the only safe way to overcome this would be for the consumer who is buying these parts to either buy them direct from the manufacturer, or from their branch houses, or from authorized advertised agents. Most all coil manufacturers, as well as magneto manufacturers, who are doing business in quantities, have branch houses or authorized agents established in the principal cities, and it should be an easy matter for the consumer or user of the car who buys the parts to get them direct from one of these authorized agents. While we have not spent much time studying this situation, we should think the above would be one of the best and surest ways of overcoming the substitution of inferior parts. —Remy Electric Co.

FEELS PULSE OF TRADE

South Bend, Ind.—Editor Motor Age—Accompanied by E. Le Roy Pelletier, our general advertising manager, I have been making an extended tour of the various Studebaker branches. During the past 29 days over 15,000 miles have been covered, during which branches at Salt Lake, San Francisco, Portland, Seattle, Minneapolis and Chicago were visited, and it is apparent to me that even to a greater extent than last year our problem is going to be to supply the ever-increasing demand. Even if the 200,000 or so cars which are predicted for next season could be built the supply would still be inadequate to meet the demands as we have found them on this trip. Being in close touch with the material and the parts market, I am certain that not over 150,000 cars of all types will be manufactured during the coming 12 months, and I think 125,000 is nearer the figure. That being the case, it will be seen that the shortage in the spring months will be greater even than last year and will be very aggravating to those buyers who were not fortunate in getting their orders in and definite delivery dates specified. In our talks with dealers—and we have met over 600 of them in the past 4 weeks—we have tried to impress upon them the necessity of getting delivery specifications in early. It is a source of great satisfaction to me that we have been able to do something that never has been done in this industry before, that is, not only to keep the factory output up to normal during the 4 months, but actually to distribute into the hands of ultimate users a constantly increasing output, due to additional factory facilities which we are adding from time to time. Our business for August was greater than that of July; September exceeded August by 100 cars; October will exceed September by the same number, and shipping specifications already in for November indicate that the only limit to the consumption of E-M-F cars will be the factory's ability to build them. The factory is now turning out 1,200 cars per month.

In the case of high-priced cars of the Studebaker-Garford class, while there is and always will be a limited demand for such cars, yet the demand is still in excess of the supply in about the same ratio as that of the E-M-F, and we have had cause to regret our over-conservatism in producing only 1,000 Studebaker-Garfords this season.—Hayden Eames.

DRAWBACK FOR MITCHELL

Washington, D. C., Nov. 8.—The treasury department has issued an order to the effect that on the exportation of motor cars manufactured by the Mitchell Motor Car Co., of Racine, with the use of imported nickel alloy in the construction of transmission shafts, gears, axles, cones and cups, and imported Hoffman ball bearings, aluminum crankcases and gear housings, Splitdorf magnetos, and annular bearings, a drawback will be allowed equal in amount to the duty paid on the imported materials used, less the legal deduction of 1 per cent.

The Realm of the Commercial Car

Motor Trucks for Army Use

RESPONDING to an American inquiry, Consul-General A. M. Thackara, of Berlin, makes the following report on the subsidies granted by the German government for motor trucks for army service, in the Daily Consular and Trades Reports:

Subsidies are granted by the German government to owners of industrial motor car vans, provided the vans and motors are constructed according to the specifications of the war department, and the owner enters into a contract with the military authorities to place the trucks at the government's disposal whenever the army is mobilized, and to keep the trucks always in such a condition during a period of 5 years that they can be utilized for military purposes. The cars are tested by military experts to ascertain if they fulfill the requirements of the specifications and are subject to inspection by army officials at any time. Sales of subsidized trucks during the 5-year period can only be made in Germany, and then only on the condition that the buyer binds himself to carry out the terms of the unexpired contract. Sales of the subsidized trucks to residents of foreign countries are not permissible.

The subsidies granted are 4,000 marks, or $952, for each motor van and trailer, and an annual payment of 1,000 marks, or $238, for 5 years. The specifications for subsidized trucks are as follows:

1—The trucks, which must be constructed in Germany, shall consist of one freight motor truck and one trailer.

2—The freight motor trucks must be capable, with all its equipment, to carry a load of at least 8,818.5 pounds, and the trailer a load of at least 4,409.25 pounds, or a total weight of at least 13,227.75 pounds, on well built streets or roads. The weight of the motor truck alone, with filled benzine and oil tanks, tools, sand box filled, etc., must not exceed 9,920.8 pounds, and with its personnel 19,841.6 pounds.

3—The highest speed, with iron tires on level roads shall not exceed 7.5 miles per hour, and with rubber tires 9.9 miles per hour. The average speed should be, with iron tires, 5.6 miles per hour—day's work about 55.9 miles; with rubber tires, 7.5 miles per hour—day's work about 74.6 miles. When iron tires are used, the driving apparatus (chain, sprocket, etc.) shall be so constructed and the diameter of the wheels be such that the speed of 7.5 miles per hour cannot be exceeded.

4—The motor trucks with trailer, when fully loaded, must be able to take, under normal conditions, all inclines from 1 to 7 per cent.

5—The quantity of benzine and oil, etc., must be sufficient, even under unfavorable circumstances, for a distance of 155.3 miles; for steam motors, 49.7 miles.

6—The body of the motor truck must have an interior space of 4 cubic meters. The maximum width over all must not exceed 6.6 feet, with an approximate length of 13.1 feet.

7—The tread of the wheel depends on the width of the truck, but must not exceed 6.6 feet. The distance of the wheel centers—Radstand—shall not exceed 14.8 feet.

8—The personnel shall be protected from the weather.

9—The lighting shall consist of: A large acetylene searchlight, with separate gas generator—strong, blinding lights are forbidden—and two petroleum lamps.

The technical requirements are:

1—Motor with minimum 35 horsepower with a maximum of 850 revolutions per minute. The differentials must be capable, when motor-free, and also at first and second speed, to increase the number of revolutions by about 100. First speed, 2.2 miles; second, 4 miles; third, 7.5 miles; fourth, 9.9 miles.

2—The motor, with a removable cover, is to be placed in front of the chauffeur's seat. The driving gear as well as the truck must be provided with all the modern improvements, so that absolute safety in working is insured, even in winter. It is of the greatest importance to provide adequate cooling, even for long trips at a slow speed, and every part of the motor must be easily accessible. Cars with chain drive must use the chain prescribed by the testing department.

3—It is imperative that the machine shall be capable of permanently using fuel produced in Germany.

4—The brake apparatus must be such as to insure safety in running with trailer down hills. The cars must be equipped with specially strong block brakes for hilly country and secured against bumping by stop blocks worked by chains.

5—The coupling device for the trailer is to be attached to the frame of the motor truck and is to be protected from uncoupling by a spring when going ahead or backing. In the front of the chassis two hooks are to be attached, by which the whole loaded train can be hauled. Steps must be placed at the back and at the side of the vehicle.

6—The wheels must comply with the specifications provided by law, and are to be constructed in such a manner that devices for running over icy, snow-covered and slippery roads can be easily and securely attached. For this purpose only wheels with solid rubber tires protected by rope are to be used. Therefore the wagon must be equipped under all circumstances with a set of wheels with solid rubber tires.

7—Every motor truck is to be equipped with the following tools: Accessories and reserve parts, except those of a special construction requiring special tools. The parts are to be stowed in water-tight, easily accessible closed cases, so that everything has its special place and is tightly packed.

Tools to be placed on trucks are: One lever, one pickax, one spade, one hatchet, one wagon jack with a raising power of at least 10 tons, sufficient tools and repair parts for getting ready and keeping the trucks in good order.

Spare parts for each wagon are: Two inlet valves, two exhaust valves, two inlet valve springs, two exhaust valve springs, one complete set of bearings for piston rods, one complete set of bearings for crankshafts, eight piston rings, one set packings, six stuffing boxes of different sizes, four complete lighting mechanisms, five meters match cord, one spring cases, so that everything has its special place core for front springs, one driving chain, four chain links, four chain-link bolts, ten meters ventilator strap, two brake blocks, two spare springs, two leather cones for coupling, one meter water hose.

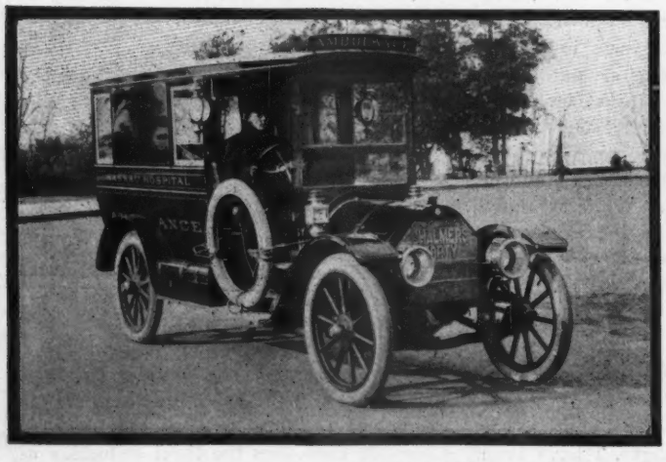
The trailer must be capable of carrying a minimum load of 2,000 kilos, and so strongly built that the attachment of a second loaded trailer may be possible, at a maximum speed of 16 kilometers per hour. The trailer must be supplied with safety brakes—block or band brake—properly protected against mud and also equipped with stop blocks for hilly country. The trailer must be adapted for animal propulsion and must carry the necessary devices therefor.

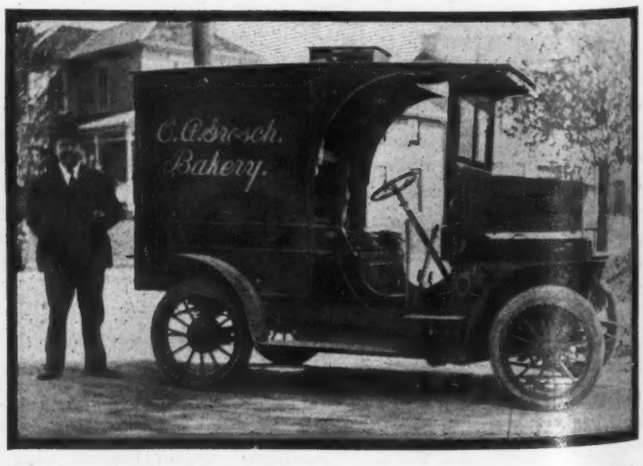
The coupling loops for coupling the truck and the trailer must be placed about 85 centimeters above the surface of the ground and in such a manner that they can be protected against dirt. The brakeman's seat must be placed sideways, so that the brakeman can overlook the whole train from his seat. There must be a reliable working signal connection between the brakeman and the chauffeur.

In time of war any motor car may be seized by the military authorities, the indemnity to be paid to the owner being fixed by a board of military appraisers. More detailed information regarding the subsidized motor cars is found in the Zeitschrift des Mittel Europäischen Motorwagen Vereins, in which the regulations are printed and which is on file for inspection at the bureau of manufactures at Washington.

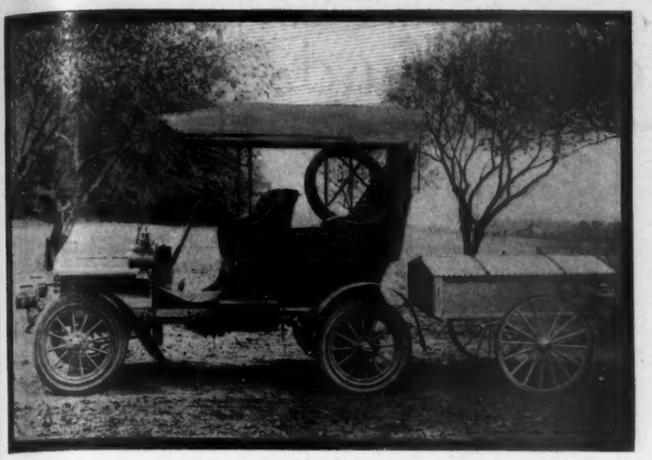
NOW A MOTOR BREAD WAGON

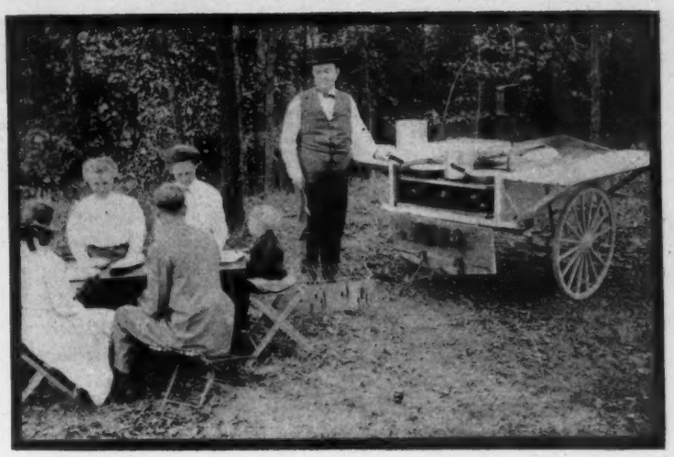
While the motor car has been put to all sorts of uses, it has remained for Charles A. Grosch, of Piqua, Ohio, to convert it into a bread wagon. He conducts a bakery business and, while the owner of two cars, until recently he has used a horse-drawn vehicle for supplying his customers. A set





CHALMERS-DETROIT AMBULANCE AND FRANKLIN MOTOR BREAD WAGON





TENDER KITCHEN DESIGNED FOR MOTOR PICNIC PARTIES

of Swiss bells is carried under the top extension over the driver's seat and these announce the coming of the motor bread wagon which Mr. Grosch has devised. Both of his motor cars are Franklins, one is a 28-horsepower, which he uses for touring purposes, the other a 10-horsepower car of 1906 model he decided to make use of in the bread delivery service. He has been using it in its reconstructed form since last summer. He saves 2 hours in his daily trip. The rear of the car platform is enclosed, providing a series of receptacles which have a total capacity of 550 loaves of bread. Above the hood is a box 14 inches deep, for further storage of bread.

TAXICABS IN COLUMBUS

Since taxicabs have been placed in service on the streets of Columbus, Ohio, they have proven a success. The rate of charge is 40 cents for the first mile and 30 cents a mile thereafter. No charge is less than 50 cents. Arrangements are being made to place several other taxis in service by the Columbus Tax-I-Cab and Auto Livery Co.

NEW YORK'S NEW AMBULANCE

The Nassau Hospital, of New York city, has just put into service a specially-built ambulance, which was designed by the Carl H. Page company, New York representatives of the Chalmers-Detroit. The body is mounted on a Chalmers-Detroit 40-horsepower chassis and inside every convenience that physicians could suggest has been provided for.

COLUMBUS WILL USE CARS

Postmaster H. W. Krumm, of Columbus, Ohio, has received authorization from the postoffice department at Washington to establish a motor mail collection service, which will be started the first of the year. The local postoffice expects to give quicker and better service by using motor cars, and in many ways the service will be improved. Three will be used, and the collectors will ride about from one mail box to another. The postoffice now has eleven wagons and eleven collectors. The big saving will be in cutting off six collectors. The government will contract for the cars and drivers from local garages. They will be of the style of the present collection wagon, with screened sides.

DESIGNS A MOTOR KITCHEN

G. L. Reeves, of Columbus, Ind., has designed a motor buffet tender, which is made for him by the Fehring Carriage Co., of his city. The tender, which weighs 475 pounds, is intended for picnic parties and in reality is a motor kitchen. It is carried on two 32-inch wheels with 1-inch square axle and two full elliptic springs. The body measures 60 inches in length, 37 inches in width, 12 inches deep next to the wheels, and 15 inches at the comb. Mounted in the body across the rear end is a three-burner gasoline stove. A 1-gallon gasoline tank for same is connected by an adjusting ell and folds down when the tender is closed. Next forward is a receptacle 11 by 11 by 11 inches, in which is fitted a complete cooking outfit, each article nestling and telescoping into the other. To the left of the cooking outfit is a 3-bin vegetable cellar, with tray lid for large cooking spoons, cake turner, carving forks, etc. To the right is a galvanized iron-lined refrigerator. Immediately forward of the refrigerator and extending to the end of the bed is a 7-gallon water cooler. To the left of the water-cooler is a 13-drawer cabinet, intended for all grocery and cooking staples, knives, forks, spoons, tea towels, table cover, etc. Two covering lids, when opened out, form two spacious serving tables. The meeting edge of one cover is provided with a patent leather flap and is held in place in transit by two large straps, which buckle securely and make the tender rain and dust-proof. A folding dining table is strapped to the inside of one of these lids. An extra broiler and an Arizona cooker for emergency, a pocket ax and a camp lantern strapped to an outside bracket complete the outfit. A rigid pair of folding legs is provided to support the end of the body when disconnected from the motor car. The tender is attached to the steel frame of the car by a neat steel clevis. The wheels have rubber tires.

MOTOR HEARSES FOR ST. LOUIS

Action taken this week by the Undertakers' Association of St. Louis has thrown into consternation the members of the St. Louis Livery, Undertaking and Embalming Association by adopting a resolution looking to the exclusive use of motor cars as hearses. Thus far the motor has not been so used in St. Louis, but to indicate it means business the Undertakers' association has appointed a committee to ascertain just how to go about perfecting its proposition. This committee will visit Chicago and other cities where the motor car is used for funeral purposes, and it is announced that as soon as a feasible plan is outlined the motor hearses will be ordered. M. H. Alexander, president of the Undertakers' association, said: "I am heartily in favor of the move and I predict that within 12 months motor cars will be used generally as hearses in this city. It is bound to come. We use motor cars for everything else. Speed is not the reason for our wishing to change. It is economy and comfort, and a desire to save horses."

WEBB MOVING TO ST. LOUIS

The Webb Motor Fire Apparatus Co., which has maintained a manufacturing plant at Vincennes, Ind., has incorporated in St. Louis, and will move its manufacturing equipment to St. Louis at once. Fire apparatus built by this concern is in use in New York and many other cities, and will be installed in St. Louis soon. It is announced that the St. Louis factory will be in operation before January 1. The incorporators are A. C. Webb, Vincennes; D. B. Blossom, Frank R. Tate, John O. Glanville and H. W. Fremmer, all of St. Louis.

From the Four Winds

N S E W

Pennsylvania's Big Registration—Over 32,000 cars have been registered at the highway department at Harrisburg, Pa., since January 1. This is over 7,,000 more than were registered the first 9 months of 1908.

Motor Cars Help Politicians—About 200 motor cars were used on election day in Indianapolis to haul voters to the polls. There were 121 precincts, and each of the two principal political parties had a machine at each voting place. Politicians assert that the unusually heavy vote was largely due to the excellent services performed by the motor cars in covering the precincts quickly and frequently.

After the Slow Rigs—A decided campaign is about to be started by the Minneapolis motorists against the evil of slow-moving teams not driving where they are required by law to drive, that is, near the curb. Motorists in Minneapolis have had this condition to contend with for months, and now the club as a body will very likely present a formal complaint to the city authorities, asking for relief.

Wants Motoring C. Q. D.—One of Minneapolis' fair motorists has started a popular movement by suggesting that some sort of a C. Q. D. signal be adopted for use in emergency. This was prompted by a recent occurrence in which a motor car was laid up on a side road about a quarter of a mile from the main-traveled road. Cars went flashing by in the night and the stranded ones, among whom there was but one man, were unable to attract the attention of the passing parties. A C. Q. D. signal on the horn or with a detached headlight would have, in this case, saved much inconvenience and worry, and suggestions are being made now for a generally-adopted sign or signal to be used among motor car drivers.

Pays Road Prizes—The Automobile Club of Pittsburg has awarded to John Kirk, Broughton, Pa., $100; Thomas Conroy, Natrona, Pa., $50; George H. Yost, Hite Station, Pa., $50; Christ Stark, Tarentum, Pa., $40; R. McKelvey, Gibsonia, Pa., $15, for the best stretches of road in Allegheny county, as shown by work done on them the past summer. All the contestants are township supervisors who used the King split drag on their respective roads.

Richmond Club Election—The Richmond Automobile Club, of Richmond, Va., has elected the following officers: President, Lewis C. Williams; vice president, E. C. Pelouze; secretary and treasurer, Otis M. Alfriend. The Richmond club started out with forty members. Today there are 135 members. The executive committee just elected for the club is as follows: J. F. B. Jurgens, H. S. Howe, S. T. Atkinson, John B. Swartwout, W. B. Nelson. The club is just entering its third year.

Milwaukee Appointments—The Milwaukee Automobile Club's committee on legislation, just appointed by President Clarke S. Drake, is imposing. Its members include Alonzo Burt, president of the Wisconsin Telephone Co.; State Senator Julius E. Roehr, Emil O. Hoffman and George A. West, big business men, with James T. Drought as chairman. Dr. J. F. Schreiber is chairman of the racing board, with John Tufts and Emil Schandein. Faustin Prinz, Richard G. Wagner and Charles R. Lull compose the good roads committee. M. C. Moore, president of the W. S. A. A., is chairman of the runs and tours board, with J. T. Drought and William L. Hibbard.

Milwaukee Show Dates—The Milwaukee Automobile Club has practically decided upon February 22 to 27 as the dates for the second annual Milwaukee motor show. An option has been taken on the new $500,000 Auditorium for that period, following action taken at the monthly meeting. The Auditorium has an immense arena in oval shape, with thousands of seats nearly surrounding it. Use of the new building will make the show twice as large as the first show held in the Hippodrome last March. The Auditorium covers a solid block.

Hunters Rent Cars—Garage keepers in Lexington, Ky., are in a quandary. Orders for cars for hunting parties on the first day of the hunting season, November 15, have piled up on them to such an extent that they have been obliged to make arrangements for all of the private cars they can obtain. In the Blue Grass country the society event second only to the greatest trotting meet in the world, is the opening of the hunting season, and this year the innovation of at least seventy-five motor hunting parties speeding over the level oiled roads will be a new departure.

Denver May Abandon Show—Because of the objection made by the dealers to the week of March 21 as a show date, the Denver Motor Club has decided that if it cannot secure the Auditorium for a week in January it will abandon the show and, instead, hold a motor car week some time during that month. At the time specified all the dealers will decorate their stores and salesrooms, and various attractions will be offered to bring the buying public to visit them. An extensive campaign of advertising will be carried on under the auspices of the motor club, which will participate in a share of the profits from the sales made during the week.

Texas Offers Tire Test—An interesting feature of the Fort Worth Star-Telegram endurance run to be held November 23 to 27, will be the very complete record of tire troubles it is proposed to keep. A small trophy will be awarded to the tires going through with the most perfect score, it being necessary that at least eight tires of the same make be entered in the competition. The Star-Telegram run will cover a distance of about 800 miles, being from Fort Worth to San Angelo and return. Fourteen cars were entered before the pathfinding car started out, and it is expected that twenty-five cars will compete. The pathfinding car on the run is the Thomas Flyer, which won the New

START OF PATHFINDING E-M-F FROM TAMPA FOR JACKSONVILLE, FLA.

York-Paris race. The route through West Texas goes through a part of the plains district, where the perfectly level country makes an ideal place for motor cars.

Wants Motor Sprinkler—The city of Two Rivers, Wis., is contemplating the purchase of a motor-sprinkling truck. It is believed that all of the present horse-drawn carts could be discarded, together with the services of the drivers, and the cost of the truck could be gained in one season.

To Tour to Madison—The Milwaukee Automobile Club, of Milwaukee, Wis., will hold an informal tour on Saturday, from Milwaukee to the state capital, Madison, about 80 miles. The object is to atteno the Wisconsin-Minnesota football game. The University of Wisconsin has provided parking space on the field for the Milwaukee party.

Taft on Road Race Course—Although the Savannah grand prize race has been over very near a year, it was made famous again by having the president of the United States ride over it. President Taft was the guest of Savannah on last Friday and while there was taken over the racing course in a Packard car. When asked what he thought of the course, he said: "This is the greatest race course in America and you shouldn't let it lay idle. Why, if we had it in Washington, we would have grand prize races every 6 months."

Interested in Roads—Bankers, farmers and merchants of Santa Barbara, Cal., alike are interested in the proposed improvement of the Goleta road for a distance of 11.24 miles, at a cost to approximate $100,000. This is the stretch of road that leads directly north, and which would be part of the great $18,000,000 highway system. The matter has not as yet been passed upon by the voters in the district, but there does not appear to be any doubt but that it will carry overwhelmingly. Recently a committee made a trip over the road in company with road-building experts in order to secure advice as to how to overcome certain problems. It has settled upon the method at Ventura, 30 miles south, where there is a so-called petrolithic system in vogue. It consists of stirring up the earth with oil and rock. The mixture is raked over often until it becomes compact. The method already has attracted wide interest and it is possible that it will become common. A piece of road that was laid 14 months ago has needed no repairs as yet. It is laid at Ventura at a cost of 4 cents a square foot. It would cost more at Santa Barbara. In the exploring party that went out can be mentioned George S. Edwards, president of the Commercial bank; P. H. Rice, a lemon grower; F. E. Kellogg, secretary of the chamber of commerce; Frank F. Flournoy, county surveyor; Joseph Sexton, a florist; Harry Connover, supervisor; J. B. Wand, city engineer, and J. M. Montgomery, both of Ventura. Several of the others are wealthy walnut growers in the district through which the road runs.

EVERYONE IS INTERESTED IN GOOD ROADS AT SANTA BARBARA, CAL.

Looking Ahead—Plans are already being made for next year's reliability run of the Minneapolis Automobile Club. It is believed that the run will be a 4-day affair, returning to Minneapolis each night, and a pathfinding car will very likely start out within a few days to gather the data.

Harrisburg Sociability—The Harrisburg Motor Club, of Harrisburg, Pa., held a sociability run from Harrisburg to Cornwall and return recently. At Cornwall there were several contests held. A model 6-40 Kline won the first prize in the vibration contest, and a Meteor won the second event, a potato race.

Columbus Show Plans—Arrangements for the motor show to be held under the auspices of the Columbus Automobile Club, December 25 to January 1, are progressing satisfactorily. Already more than half of the available space has been contracted for, and a number of Columbus sales agents are not yet provided for. Applications have been received from a number of manufacturers who are not represented in Columbus with agencies. Accessories also will be exhibited.

Boston Merger Pending—The prospects are bright now for the Bay State A. A. and the Boston Motor Club merging into one big, strong organization in the Hub. The merger plan has been sent to the members of the Boston Motor Club. Those who wish may become members of the Bay State A. A., their membership being transferred for the money they paid as members of the Boston Motor Club. It means that the Bay State club will become bigger and better than ever, for the merger will bring at least 100 new members into the fold, who will be a great help to the club in many ways, while the Boston Motor Club goes out of existence.

Denver Dealers Plan Contests—For the purpose of stimulating interest in motoring and keeping the public awake as to what is doing, the Automobile Tradesmen's Association of Denver is preparing a number of events and contests for the coming year. The desire of many of the dealers to hold a hill-climb may be realized late in November, and those most interested are now looking for a suitable hill to negotiate. The Chimney Gulch-Lookout Mountain climb is favored.

Club Has New Home—The new Detroit Motor Club has established headquarters at the Hotel Tuller, using the same rooms which were used by the Detroit Glidden Days committee, and, with Secretary John Gillespie in charge, will boom the work of organization through the winter. The new club is in direct harmony with the Automobile Club of Detroit and the two expect to work hand in hand for the benefit of the sport in general. The new organization has applied for membership in the American Automobile Association, through the Michigan association.

Preparing New Orleans Track—Work has begun on the mile race track at the fair grounds, New Orleans, in preparation for the good roads race meet to be held November 20-21. The course will be scraped of all its present top soil until only the buckshot black loam is left. Then that will be oiled. Arrangements have been made for the use of the city road repair forces for this work. The Standard Oil people have made a number of concessions in order to get the contract for oiling the track because of the good roads connections. Last season oil was procured from the oil wells at Jennings, La.

Legal Lights and Side Lights

WANT SPEED LIMIT REMOVED

THERE has been much discussion among motorists of the movement started in Minneapolis to abolish the speed limits and to hold all drivers of motor cars strictly responsible for any accidents in which their carelessness or recklessness played a part. Minneapolis motor car owners feel that the public plays a prominent part, contributing through gross carelessness in traveling the street, to the accidents which occur from time to time, and many men prominent in the city who own and operate motor cars think it is time that strict measures were taken to take care of the public if it cannot take care of itself. Dodging across streets in the middle of blocks, shooting out from behind trolley cars by pedestrians and other forms of carelessness should be stopped, by the police if necessary, in order to at least give the drivers of cars a chance to get about without accident. Under present conditions driving a motor car at 6 or 8 miles an hour, it is held, is more dangerous and more likely to result in accident than driving elsewhere at 20 to 25 miles an hour. The motorists, as a body, are anxious that chauffeurs and operators of cars be arrested and punished when they endanger the lives of others by their careless or fast driving, but also feel that the public should in some way be made to realize the necessity of using ordinary care.

SPEED TRAP ABOLISHED

Nashville has for a couple of years past had two special policemen in citizen's clothing detailed to the special duty of catching scorching motorists, but a new city administration has just come into power and the two sleuths have been put back into uniforms and are once more patroling beats. The speed limit in Nashville is 20 miles. The state law permits 25 miles. Broadway is a smoothly-paved and very wide street and has one of the best pikes around the city extending far out into the country. It is a tempting route for speeding and there is no question but that a few enthusiasts at times exceeded the speed limit considerably. The mayor, who has just gone out of office, had two spotters detailed. They were in citizen's clothing and were furnished with stop watches. They measured off short distances on Broadway and other favorite routes of motorists and whenever a machine looked like it was moving a little rapidly they timed it, and woe unto the man who exceeded the limit, though it be only for a couple of blocks. The last city campaign was between the liberal and reform elements. The liberals won. Speeding did not figure in the election, but it is taken for granted, now that the special officers have been removed, that it did, and some swift moving along Broadway is expected. The mayor said that the uniformed policemen could tell if a man was willfully exceeding the speed limit and that it was a waste of money to have two men doing nothing but time motor cars.

IGNORE THE STATE LAW

The city of Plymouth, Wis., has adopted an ordinance limiting the speed of motor cars to 8 miles an hour, with a penalty of from $5 to $25. Several other Wisconsin cities have recently made their own speed limits, despite the fact that the municipal court at Stevens Point, Wis., decided that the state law, which fixes a maximum speed in cities at 12 miles and in country districts at 25 miles, supersedes all municipal laws.

AGAIN THE WHEEL TAX

The constitutionality of the wheel tax imposed upon motorists of Washington, D. C., last winter by an act of congress, is to be tested in the courts. LeRoy Mark, a member of the Automobile Club of Washington, has secured from Justice Wright, sitting in the district supreme court, a rule on the district authorities to show cause on November 12 why the wheel tax assessment should not be quashed. Mr. Mark's contention is the assessment is unconstitutional because it imposes a double tax, as the owners of motor cars are already taxed for them as personal property. It is pointed out that in 1902 congress passed a law which imposed a personal tax of 1½ per cent on all property of a personal nature. This law is still in force and all motorists are levied upon according to its provisions. Last March, as set forth in Motor Age at the time, congress, without specifying that the personal tax on motor cars should be discontinued, enacted the law requiring motor car owners to pay a wheel tax of $3 per annum, with an additional tax of $1 for every seat over two in all cars. According to Mr. Mark's complaint, the revenue from the tax, if it is enforced, will reach between $20,000 and $30,000, and this, it is claimed, is a great imposition upon motor car owners, and he maintains he is doing a service to the 4,531 other owners in testing the law. The district assessor states that only one bill for the wheel tax had been sent out, but that he proposed to send statements to all other motor car owners as soon as they could be made out. In reference to the contention that there is no penalty for the failure to pay the wheel tax, Mr. Richards said congress will be asked at the coming session to make a penalty. He further stated the question of a double tax being imposed upon motor car owners was practically the same as the cigar dealers are compelled to pay. They are assessed for their personal property and are then compelled to pay an additional sum of $12 a year for a license. The wheel tax, he explained, was for the use of the highways. It is understood that a fund has been subscribed to enable Mr. Mark to fight the wheel tax through the various courts, and that a campaign will be inaugurated to have the law set aside.

WORKING ON NEW LAW

Denver's new motor ordinance which has been in preparation for some time will come up before the city council at the next meeting. The ordinance is the joint effort of the city attorney and his staff working in conjunction with the fire and police board and the Denver Motor Club. The new law will include measures covering the rules of the road and will apply to all classes of vehicles. The term vehicle probably will be construed to mean equestrians, led horses and everything on wheels or runners except street cars and baby carriages. This will mean that bicycles also will be brought under control. Among the most radical changes contemplated is one requiring that an annual license fee be paid for each motor car and that an operator's permit must be renewed annually. All chauffeurs driving for hire vehicles must pass an examination as to their qualifications to properly handle a car. Taxicab rates also are to be governed in the new ordinance measure. Rear signal lights will be required on all vehicles, and all vehicles, whether they be coal wagons or motor cars, will be compelled to observe the rules of the road. The use of a machine without the knowledge or consent of the owner will be made punishable by a jail sentence. A small silver badge, to be worn on the sleeve or cuff of the motor car driver, is contemplated. The Denver Motor Club is arranging for an identification card to be carried by its members. In case of an accident, or if the bearer is stopped by the police for any cause, the presentation of this card will secure the member's release without the necessity of his going to the police station. The officer retains the card and delivers it to the chief of police. The owner is suspended from the club during the time the police have his card, and he must call and secure its return in person. The secretary of the motor club will be notified by the chief of police, and if the testimony shows that the member was guilty of violating the law or his carelessness was responsible for an accident, the club guarantees to assist in prosecuting him. This identification card system will not be incorporated in the new ordinance.

The Motor Car Repair Shop

IT is a well known fact that when the mixture of gasoline and air admitted to a motor through a carbureter is varied so that the proportion of air is far in excess, and that of gasoline insufficient, and the motor is speeded up, there will be a popping and back-firing in the carbureter. This condition may be brought about on almost any motor at any time by simply cutting down the supply of gasoline at the spraying nozzle and enlarging the air supply. Now if one were to ask the average motorist or repairman the cause of this back-firing, for the want of technical words or knowledge, he simply would answer that the mixture was poor—too much air and not enough gasoline, which would be quite true, but hardly enough to satisfy those bent on investigating the causes of natural phenomena. For the investigator, then, it is stated that the principal effect of variations in composition of the explosive mixture, is upon the rapidity with which the flame propagates itself throughout the combustion chamber. Experiment has shown that there is a proportion at which the pressure at the beginning of the explosion stroke, caused by the inflammation of the mixture, rises most rapidly and produces the greatest effect. To impoverish this mixture by diminishing the proportion of fuel in it retards the ignition process, diminishes the initial pressure, lowers the average or mean pressure through the explosion stroke, and may, perhaps, be carried to a point at which ignition will not occur at all. At or near the limit of such impoverishment it will be apparent that variations in the amount of the compression on the compression stroke will vary the readiness of the mixture to ignite. An impoverished mixture, furthermore, and particularly one which is diluted with products of combustion, may ignite slowly enough so that it is not completely burned at the time when the intake-valves again open, so that the explosive mixture in the intake-passages is fired from the cylinder and back to the source of fuel supply.

MAKING COIL SPRINGS

There are divers methods of making coil springs, but some are better than others. There are many who make all springs, compression and extension alike, by simply winding a tight coil on a mandrel and then stretching those to be used as compression springs. This, of course, is an error, for no compression spring made in this way will stand up for any reasonable length of time. In fact, the process of making a spring of this type is just the opposite. A compression spring should be spaced while being wound, and then compressed a few times to set it. In Fig. 2, a method of winding a compression spring is illustrated. The tool T is made from a piece of soft brass or steel, or some such less elastic material which does not expand to any great extent after being wound, and should have an inside diameter of about 1-32 inch greater than that of the mandrel, so it may slide upon it loosely. The end, E, of the tool can be ground down or sprung out to give the required space between the coils of the spring to be wound. With a tool of this kind all that is necessary after having secured one end of the spring wire in the mandrel, by placing the end through the hole, H, and turning the mandrel around a couple of times by hand, one has only to slip the tool onto the mandrel, M, hook the coil end of it, E, over the wire, give it a couple of turns in an anti-clock-wise direction, then, while holding the tool and wire in one hand, start the lathe with the other and wind the spring. When a spring of sufficient length has been wound, reverse the lathe for a moment to disengage the tool, compress the spring several times to set it, then cut off the end at the hole H and remove it from the mandrel.

Hints to the Amateur

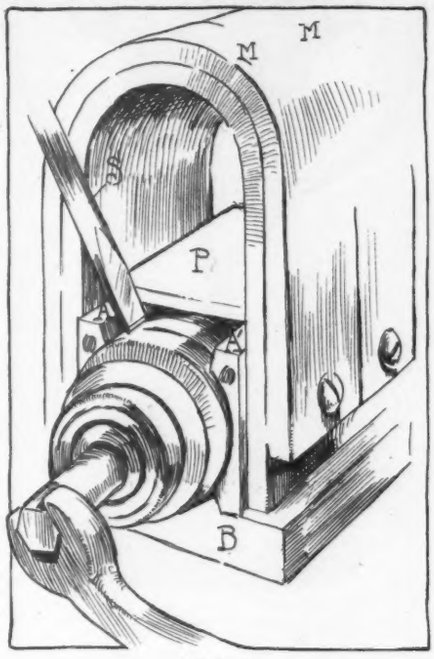


FIG. 1

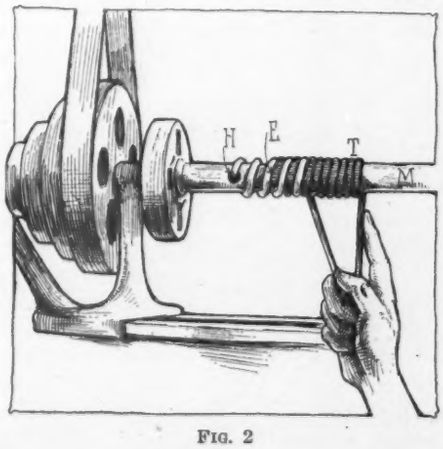


FIG. 2

MAGNETO DISASSEMBLY

Now that magnetos are become almost as much a part of a motor as the carbureter, it is quite necessary that the repairman who insists on at least making an effort to overhaul these comparatively delicate mechanisms should be instructed as to a few precautions to be exercised when taking the magneto apart. It is characteristic of the novice, when the magneto fails to operate or a very poor spark is given off, to just remove all outside screws and parts in order to get at the heart of the machine, expecting to find there, he knows not what—perhaps some loose or broken part or connection—and on finding nothing of this sort, the outfit is again put together, often improperly, and sent to the nearest magneto agency for repair or adjustment, and the owner advised that, upon examination, the armature or something of that sort was at fault, which often is not true and gives the manufacturer of the magneto a black eye, so to speak. What is more, in disassembling a magneto a perfectly good armature often is damaged, or equally well-charged magnets demagnetized or improperly replaced with the same effect. The removal of the magnets of a magneto is rarely if ever necessary, and they should therefore be left intact. If, however, it should be required to remove them they should be carefully marked so that they can be properly replaced with all positive poles on the same side, and a soft iron keeper should be placed across the ends to prevent a loss of magnetism. In Fig. 1 Motor Age endeavors to show how two errors may be avoided in the disassembly of a Bosch magneto. In cleaning up a magneto it often is necessary to remove the armature. To loosen the nut on the end of the armature shaft the armature must be prevented from rotating. This is done as shown in the illustration; a screwdriver is inserted between one edge of the armature core and the pole-piece A. In doing this, however, great care must be used so as not to damage the insulation of the armature winding by shoving the screwdriver down so far that it comes in contact with the winding. When the armature is removed, a soft iron plate, P, should be laid across the pole-pieces as shown, and it is generally unnecessary to take apart the magnets M, and the pole pieces A and A'.

Among the Makers and Dealers

Has the Mercer—The Deright Automobile Co., of Omaha, has taken the agency for the Mercer.

Electrics Segregated—It has been decided by the Studebakers to make a separate department for electrics and have selected as manager C. H. Tyler, formerly connected with the Chicago branch.

In Temporary Quarters—Gawthrop & Wister, Philadelphia Elmore agents, pending the erection of a new four-story concrete building on the site of their present agency at 244 North Broad street, will occupy temporary quarters at 223-225 North Broad street.

St. Paul Concern Moves—The St. Paul Auto Co., agent for the Chalmers and Hudson, has moved into its new garage at 197 West Fifth street. This is the second time that this firm has moved since its organization a little over a year ago, each change being necessary on account of increasing business.

New Rambler Agency—Foster & Co., of 183 Allyn street, Hartford, Conn., have taken on the Rambler, which during the past season has been represented by Mansuy & Smith. Shubel A. Foster, the head of the firm, was formerly with the Pope Mfg. Co. and the Corbin Motor Vehicle Corporation.

Plow Concern an Agent—The J. I. Case Plow Co., of which the Great Northern Implement Co. is a part, has taken up the handling of motor cars. The Great Northern Implement Co. has the Ohio for Minnesota and North and South Dakota. The Case company will handle the Ohio in Wisconsin, Nebraska and the three western tiers of Iowa.

Agency in Racing Game—The Conduitt Automobile Co. of Indianapolis, representative in Indiana for the Knox, is the first retail concern in that city to announce its intention of participating in racing. The company has placed an order for a 50 horsepower Knox racing car, which will be piloted by Edgar Updike and will be entered in numerous events at the Indianapolis motor speedway and also throughout Indiana.

Will Make Cars—The Racine-Sattley Co., of Racine, Wis., will, it is reported, enter the motor car manufacturing field within a short time. The company is one of the largest carriage builders in the west. Some time ago it was reported that the concern had arranged with the manufacturers of the Moon car to build it at Racine, but this was denied. H. E. Miles recently retired as president, and George H. Yule, of Kenosha, a heavy stockholder in the Badger Brass Mfg. Co., succeeded him. The carriage works are

Loving Cup Presented to H. O. Smith

ideally equipped and with but little expense could be converted into a motor car factory.

Will Sell Trucks—The Haynes Auto Co. of Minneapolis announces that it has taken on the Randolph truck in the northwest.

Ex-Liverymen in the Trade—M. Griffon & Sons, the former livery firm of Baltimore, have taken on the agency for the Knox. The firm has opened a garage at Park avenue and Howard street.

Fire in Washington—Fire did damage estimated at $58,000 to the store and stock of the Rudolph & West Co., jobbers of motor car supplies and accessories in Washington, D. C. Mr. West is president of the Automobile Club of Washington.

New Electric Enterprise—It is understood Cleveland capital is going into Minneapolis in the spring to erect a large garage and charging station for electrics. This will be in the Lowry Hill district, close to the residential part of town, where electrics are largely owned and used. The Minneapolis Battery Co. will be absorbed in the move.

New Packard Store—New Packard headquarters have been opened at Newark, N. J., by the Packard Motor Car Co., of New York. The Newark establishment is a branch of the Packard Motor Car Co. of New York. The building is of reinforced concrete and brick construction, and is fireproof. The salesroom is a simple but impressive room done entirely in mahogany. On the main floor is the parts stock room, where there is maintained a complete supply of parts for Packard cars of all years. The entire rear end of the building is occupied by the repair department.

Is Cartercar Representative—H. J. Curtis & Co., of Simsbury, Conn., have the agency for Hartford county of the Cartercar.

Wrong Price Given—A typographical error in the advertisement of the Jackson Automobile Co. in the last issue of Motor Age gave the price of the model 50 Jackson as $2350; it should have read $2250.

Takes on the Stearns—The Stearns Co., of Washington, has been formed by James J. Flynn and C. Cassard Schroth to handle the Stearns in Washington, D. C. Mr. Flynn formerly handled the Mitchell. The company has secured quarters in the Congressional garage, 628 Pennsylvania avenue, N. W.

New Oklahoma Concern—The Powers Motor Car Co. of Lawton, Comanche county, Oklahoma, is preparing to erect a fire-proof motor car sales room and garage. The building will be 50 by 150 feet, two or three stories with concrete floors and fire-proof walls. The Powers company handles the Studebaker line.

New Kissel Power Plant—The Kissel Motor Car Co., of Hartford, Wis., will occupy its new power house, built to replace the structure destroyed by fire early in September, on December 1. The equipment includes a 400-500 horsepower tandem compound condenser engine. All machines and tools will be operated by individual motors. The power house is 44 by 80 feet in size and of reinforced concrete and brick construction.

Budlong President—The Packard Motor Car Co., of Philadelphia, which has taken over the building of the Keystone Motor Car Co., former agent, at 216 North Broad street, has as its president M. J. Budlong, who is also at the head of the Packard Motor Car Co. of New York. It is understood that the reason for the change in representation was the desire of E. H. Godshalk, manager of the Keystone Motor Car Co., to retire from the business.

Lenox Smith President—At the recent annual meeting of the Standard Roller Bearing Co. of Philadelphia, held last week, the following directors were elected for the ensuing year: Lenox Smith, William D. Sloane, Isaac H. Clothier, W. B. Osgood Field, Henry De Forest Baldwin, Edwin Packard, Herbert DuPuy, Edward B. Smith, John C. Winston, George H. B. Martin, James Boyd, R. S. Woodward, Jr. These directors formally elected the following officers for the ensuing year: President, Lenox Smith; vice-president, W. B. Osgood Field, vice-presi-

dent and general manager, R. S. Woodward, Jr.; secretary and treasurer, W. M. Baldwin.

Will Soules Head Tester—Will Soules, a racing driver, will have charge of the testing department of the Croxton-Keeton Motor Co., of Massillon, O.

Give H. O. Smith a Cup—A loving cup has been presented to H. O. Smith, president of the Premier Motor Mfg. Co., by the distributors of that car during their annual convention, recently held at Indianapolis.

New York's Latest—The Colt-Stratton Co., Broadway and Sixty-eighth street, New York, will handle the Cole 30. It will distribute the Cole for the entire eastern territory, and the Paige-Detroit for Greater New York, including a radius of 50 miles.

Selling Only Commercial Cars—An agency for the Frayer-Miller trucks has been established in Indianapolis by W. D. Cost and P. M. Orlopp. They will sell commercial cars exclusively and have leased a one-story building at 224-226 South Pennsylvania street as a sales room and garage. The Rambler Automobile Co. has engaged quarters in the building also.

Rapid Growth—The Rapid Motor Vehicle Co., Pontiac, Mich., is putting up two large structures, one 300 by 100 feet, three stories high, and a power plant with chimney towering to a height of 175 feet. The power plant will be equipped with automatic devices for unloading coal, as well as with automatic stokers. The entire plant is connected with underground tunnels so that materials will be transferred from one port to another without going into the open air. With the completion of the present buildings the plant will cover a total of 16 acres of ground space.

Cleveland Moves—The enlargement of local salesrooms in Cleveland has become quite the thing. The latest concern to spread out is the Maxwell-Briscoe Cleveland Co., which has closed a deal to lease the entire three-story building occupying three lots on Euclid avenue opposite East Twentieth street, which has been only partly occupied by this company for some time in connection with the Detroit Electric Co. This building has a fine truss-roofed garage in the rear of the wide, finely finished show room with ample repair shop and storage quarters. The Cadillac agency of the Barger Auto Co. is ready to move into a similar large building on Euclid avenue opposite East Seventeenth street, which is just finished. The Cook Motor Sales Co., agent for Reo and Premier, has moved into a large brick, concrete-floored building occupying the full length of a deep lot of several store widths, on Euclid avenue opposite East Twenty-fourth street. The Euclid Automobile Co., which will handle the new Firestone-Columbus gasoline car, and the Columbus electric, formerly in the Reese Motor Car Co., has also taken one of the very large stores in the same building as the Cook Motor Sales Co.

Matlack Has Resigned—J. C. Matlack has resigned as vice-president and general manager of the Michelin Tire Co. As to his plans for the future Mr. Matlack is not ready to talk.

King Increases Capital Stock—The King Leather Tire Co., 3417-19 Vliet street, Milwaukee, Wis., has increased its capital stock from $20,000 to $40,000. The production is being increased and the plant is working overtime to fill orders.

Dasey Promoted—P. J. Dasey, who for several years past has been eastern manager for the Motsinger Device Mfg. Co., has been appointed sales manager of that concern, and is now located at the factory at Pendleton, Ind. R. S. Bryan has been appointed eastern manager, with his office at 31 West Forty-second street, New York city.

Re-Elected A. L. A. M. President—At the recent annual meeting of the Association of Licensed Automobile Manufacturers the following officers and executive committee were elected: President, Charles Clifton; vice-president, S. T. Davis, Jr.; secretary, L. H. Kittredge; treasurer, Colonel George Pope. Executive committee: Charles Clifton, S. T. Davis, Jr., Thomas Henderson, Hugh Chalmers, Herbert Lloyd.

Buys Hatcher Plant—The factory and plant of the Hatcher Auto-Parts Co. has been purchased by the Liggett Spring and Axle Co., of Pittsburg. The specialties as manufactured by the Hatcher Auto-Parts Co. will be continued. In addition, the Liggett company is turning out from its plant at Monongahela, all types of springs and roller bearings, and also front and rear axles for several sizes of cars. It proposes operating the factory at Cleveland, in the same location as did the Hatcher Auto-Parts Co. W. A. Cluff, who for the past 5 years manager of the Hatcher Auto-Parts Co., is still in charge of the Cleveland factory.

Cowan Locates in Alliance—W. A. Cowan has bought the business and plant of the Stark Summit Automobile Co., at Alliance, O., and will enlarge the garage at once.

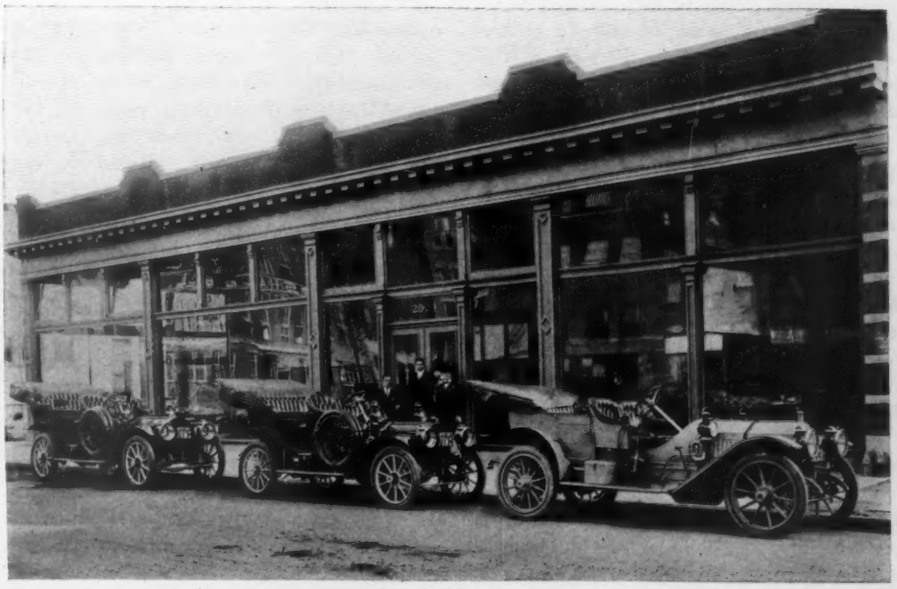
Corton Goes to Omaha—A. J. Corton has accepted a position as superintendent of the R. R. Kimball garage. Until recently Mr. Corton has been traveling expert for the Stevens-Duryea.

Dart a New One—The Remington Dart, produced and marketed by the Remington Auto Co., 1351-53 Ridge avenue, has made its appearance in Philadelphia. It is a 500-pound runabout, and has a two-cylinder opposed engine.

Trebles Its Capacity—The Fort Pitt Motor Mfg. Co., which located at New Kensington, Pa., 2 years ago, will treble its present capacity. Plans are now being made to enlarge the plant. The company is now making patterns for a lighter car and models will be ready in a few weeks.

Adds to Hartford Plant—A new press room for the Hartford Rubber Works Co. is now in the course of construction at Hartford, Conn., and it is expected that it will be ready for occupancy about December 1. The building is of brick, 197 feet long and 28 feet wide and will materially increase the efficiency of the works.

Denver Gossip—The McDuffee Motor Co. has taken the Colorado agency for the Woods electric, which will be handled in conjunction with its present line of the Chalmers-Detroit and Hudson. W. W. Barnett, 30 West Colfax avenue, agent for the Stoddard-Dayton, has added the Alco to his line. The agency for the Regal has been taken by the newly organized Fawcett Motor Co., of which W. C. Fawcett is president and treasurer, and George Packer, Jr., is secretary and manager. The



BRANCH OF PACKARD MOTOR CAR CO. OF NEW YORK AT NEWARK, N. J.

company has begun the erection of a two-story building, 50 by 150 feet, at 1249-53 Broadway.

Starts in St. Louis—The Bagnell Automobile Co.'s garage is the newest and one of the most handsome in St. Louis. It is located at 4160-62 Olive street.

Doherty Resigns—H. W. Doherty, sales manager for the Cameron Car Co., Beverly, Mass., for the past 2 years, resigned his position with that company November 1. Mr. Doherty has not as yet announced his plans for the future.

Peck Company Moves—The Peck Motor Car Co., which recently succeeded the Cadillac Automobile Co. of Indiana, has moved from 25 East Ohio street to 322 North Delaware street, in Indianapolis. The company has the Indiana agency for the Cadillac.

Has American Territory—Instead of representing the American in Portland, Ore., the Polson Implement Co., of Seattle, has only western Washington territory. W. H. Hoffman, of 54 East Seventh street, has the Portland American agency, while the Spokane or eastern Washington territory will be handled by the Standard Motor Co., of Spokane.

Toledo Wants a Tire Plant—An effort is being made by Toledo to get a large tire factory which it is said is now operating at Akron, O. John N. Willys, head of the Overland plant, has made a proposition to take enough of its product to make it an object to locate in Toledo, and it is understood that if a suitable location can be found the change will be made in the near future.

Omaha Show Decided On—Omaha dealers met last week and decided that Omaha will have a show next spring, to be given on a large scale. It is proposed to effect a permanent organization embracing the dealers of both Omaha and Council Bluffs. Whatever friction existed in the past will be wiped out by the new organization. When Omaha gave its first show 5 years ago, the dealers could be counted on the fingers of one hand. Now there are thirty-five and more coming as fast as buildings can be built for them.

Columbus Changes—Changes among the agencies in Columbus, Ohio, have been the rule recently, and there are still several more to report. The F. H. Lawell Co., which has been handling the Franklin, on South Third street, will be succeeded by the Franklin Motor Car Co., December 1, and will move into a new building at Fourth and Spring streets. The concern will also handle the Reo, which is the first time that make has been represented in Columbus. The Speedwell company, of Dayton, will have a sales agency in Columbus, located on the same corner. The Kimmel Brothers, of Dayton, will be the central Ohio agents. A new building is now being erected for the agency. Frank Corbett, who has twenty-three counties in central Ohio for the Maxwell, will move into his new sales rooms at 58 to 62 East Spring street about the first of the month.

"MITCHELL AT THE TOP"

Lands Thomas Agency—The Overland Automobile Co., of Seattle, has secured the agency for the Thomas Flyer and will carry this car in addition to the Overland, Marion and Waverley electric.

Joins Baltimore Colony—The latest motor car company to enter the Baltimore field is the Standard Motor Car Co., 14-16-18 Mount Royal avenue. The company started business on November 1 and will be the local distributor of the Cadillac and Oldsmobile.

Has Indiana for Rambler—The Rambler Automobile Co., recently organized at Indianapolis, has taken quarters at 224 South Pennsylvania street, where it will act as Indiana distributing agent for the Rambler. For several years the Rambler has been represented in Indiana by the Hearsey-Willis Co., which will devote its attention during the coming season to the White, Mitchell, Waverley and Hupmobile.

Norris in Charge—A. W. Norris, formerly manager of the Buick Sales Co., at Toledo, has formed the Norris-Toledo Motor Sales Co., which concern has opened one of the most extensive garages in the city of Toledo, at 625-627 Madison avenue. Mr. Norris will manage the new firm and has several in the territory closing up branch agencies. The concern will handle the Velie, Demot and Parry. George F. Talty, George D. Wilson and Charles E. Doan, formerly connected with Mr. Norris in the Buick interests, will continue with him in the new concern, which will operate in Ohio, eastern Michigan and northern Indiana.

Nestman Made Manager—Otto Nestman will be manager of the new Sweet-Edwards Automobile Co., of Omaha, which will handle the Moon, American and Parry.

Handling the Regal—A. V. Watkins and William S. MacMurray have leased two rooms at 10-11 Jefferson avenue, Toledo, in the new building just being erected, and will open an agency which will be devoted to the sale of Regal cars.

Great Western Appointments — The Great Western Automobile Co., of Peru, Ind., has closed contracts for 1910 with the following: Seldon Automobile Garage, Seldon, Ill.; J. F. Metzler, Helena, Ohio; C. A. Kenney, Nicholasville, Ky.; H. O. Vogel, Los Angeles, Cal.; George H. Peddle, Perry, New York; Albert Sterns Motor Car Co., St. Louis, Mo.; O. B. Shutt, Peru, Ind.

Will Call It Continental—It is stated that the product of the Indiana Motor and Mfg. Co., which is to make a four-cylinder gasoline car, will be known as the Continental. The company was recently organized by Indianapolis men and the factory has been located at Franklin. The Indiana Motor Sales Co., with headquarters in Indianapolis, will distribute the company's output.

Slater Joins Overland—A. P. Slater, who for some time has been connected with the Aluminum Casting Co., as superintendent at the Eclipse foundry at Detroit, has severed that connection to accept a position with the Overland company at Toledo, where he will take charge of the foundry. The Overland company will equip its foundry with improved appliances and produce aluminum and bronze for their 1910 cars.

Chooses Columbia City—Citizens of Columbia City, Ind., have secured the factory of the Trepert Auto Gasoline Engine Co. of Rochester, N. Y., which will locate in the former city at once. Columbia City people have subscribed for $15,000 worth of stock and the company will incorporate under the Indiana laws with an authorized capitalization of $35,000. Auburn, Kokomo and Fort Wayne were other Indiana cities that offered special inducements to get the plant.

New Capital for O. T. Six—It is reported, but not confirmed, that George Tener, representing Pittsburg capital which owns and controls the Wisconsin Engine Co., of Corliss, Wis., has purchased the stock of the Owen Thomas Motor Car Co., of Janesville, Wis., makers of the O. T. Six, and will begin the manufacture of the new car on an extensive scale. It is said that the plan is to increase the capitalization to $500,000. Owen Thomas has the privilege of underwriting one-half of this amount up to a certain time. The engine plant at Corliss is to be used to produce the 1910 allotment, it is said,

and for next year a new factory building will be erected in the Racine county manufacturing village.

Made a Buick Agent—Edward G. Buroff, of Watertown, Wis., who recently built a large garage at 418 Main street, has been appointed district agent for the Buick.

"Mitchell at the Top"—One of the features at the Atlanta show from Saturday to Monday was the feat of the Mitchell people, who hoisted a Mitchell car to the tenth floor of a building adjoining the Piedmont hotel, where it remained in mid-air for 3 days. On the under side of the platform on which the car rested was the sign, "Mitchell at the Top."

Rockwell Dines His Agents—F. S. Rockwell, the new manager of the Buick branch at Toledo, entertained his sub-agents on Saturday. A dinner was given for them and on Monday they went to the factory at Flint, Mich., where they will be shown the construction of the Buick from the making of a cone to the car in its finished form. The Toledo agency will for the coming season also handle the Welch.

Will Stay in Racine—The purchase of a tract of 30 acres adjoining the properties of the Pierce Motor Co., of Racine, Wis., by Frederick Robinson, a heavy stockholder in the concern, sets at rest rumors that the plant would be moved to Milwaukee. The company was reorganized some time ago and the capital increased to $300,000, several wealthy Milwaukee manufacturers with interests in Racine, becoming shareholders. It was decided to build complete cars as well as produce the Pierce motor, and extensions to the plant were found necessary.

Plans 2-Week Show—J. A. Wister, W. J. Foss and J. L. Gibney, comprising the show committee of the Philadelphia Automobile Trade Association, last week closed with the Third Regiment, P. N. G., for the use of the armory building at Broad and Marton streets, for the 2 weeks from January 15 to 29 inclusive. The purchase of the Second Regiment armory by the state necessitated the abandonment of the plan to again use the uptown building. The committee will eke out the limited space by erecting a temporary structure, 40 by 200 feet in dimensions, on the vacant lot adjoining. Even so, the space at the disposal of the committee will fall so far short of the requirements that the 2-week plan became a necessity. At the end of the first week those exhibitors who are so fortunate as to draw numbers which shall entitle them to show their goods during the first half of the exhibition, which will be devoted to pleasure vehicles only, will be compelled to vacate the armory to make room for the second week contingent. Tires, accessories and allied exhibits, along with commercial vehicles and those among the pleasure-car exhibitors who fail to secure lucky numbers in the draw, will hold forth during the second week. By this arrangement the show committee hopes to accommodate all the applicants for space.

Plant at Pottsville—The Reading Automobile Co. will shortly establish a plant at Pottsville, Pa., to be known as the Reading Automobile Co. Charles Miller, Carbondale, Pa., will be manager.

Big Increase in Capital Stock—The R. L. Morgan Co., maker of trucks, located at Worcester, Mass., has increased its capital stock from $300,000 to $1,000,000. The Morgan company states it has orders on hand for 121 trucks.

Jeffery Denies Tire Deal—Thomas B. Jeffery, founder and head of the Rambler works at Kenosha, Wis., denies that the company contemplates making its own tires in the future. It had been reported that the Rambler purchased the plant of the Chicago-Kenosha Hosiery Co. and would convert it into a tire plant. Mr. Jeffery says officially that the report is without foundation in fact.

Hayden Moves His Quarters—John Hayden, manager of the Indianapolis sales branch of the Maxwell-Briscoe Motor Co., has moved the company's temporary quarters from 320 East Market street to 415 Massachusetts avenue. The latter location is a three-story building and recently was vacated by the State Automobile Co., which has moved into the Conduitt building in North Delaware street. The Maxwell-Briscoe Motor Co. is erecting a three-story building to cost about $40,000 at Illinois and Vermont streets.

Wilcox Company Plans—At a meeting of the board of directors of the reorganized Wilcox Motor Car Co., of Minneapolis, the plans of the new concern were outlined and it is announced that this company will make 300 of the new Wilcox pleasure cars in 1910 and 165 Wilcox trucks. New buildings are being added and the capacity of the plant will be doubled so that in 1911 3,000 medium-priced cars can be made and 500 trucks. The capital of the company has been increased to $1,000,000, and when the plant is completed the Wilcox company will make its own motors and bodies, in fact, everything but the Timken axles which will be used in the product.

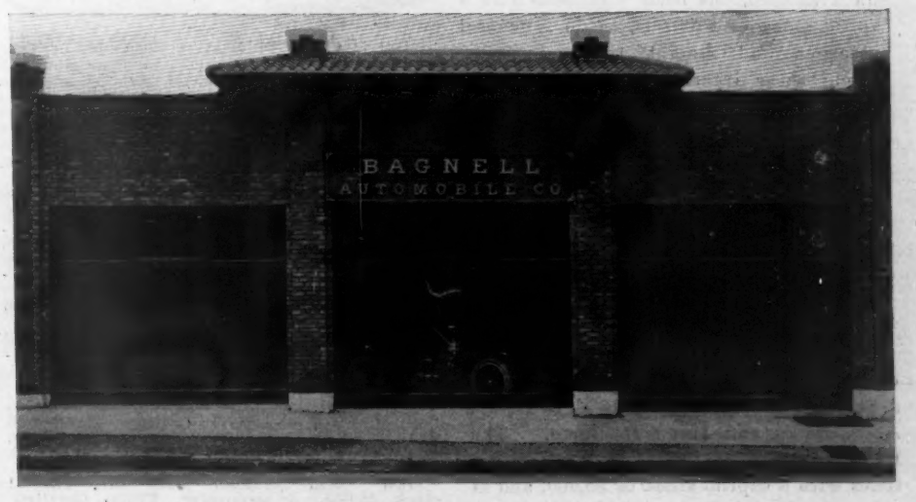
Call It the New Rambler—A significant fact, now being quite generally commented upon, is the designation by Thomas B. Jeffery & Co. of all the 1910 Rambler models as the New Rambler.

May Go to Leicester—It is reported that the Buffalo Truck and Motor Co. has decided to locate its new factory for the manufacture of power trucks and delivery wagons in the town of Leicester, near Mount Morris, N. Y.

New in Washington—The Maxwell line will be handled in Washington, D. C., by the John R. Thomas Automobile Co., which was incorporated last week by John R. Thomas, W. B. Guy and Charles T. Thomas. The capital stock is $10,000. Mr. Thomas formerly was connected with the Thomas & Tolman Automobile Co., which handled the Pullman and Maxwell.

Jeffery Wins Big Suit—Thomas B. Jeffery & Co., of Kenosha, Wis., were awarded a verdict of $133,000 damages against the Chicago and Milwaukee Electric Railway Co., this being the largest verdict ever rendered in any circuit court in Wisconsin outside of Milwaukee. Mr. Jeffery sued for $2,000,000 as damages resulting from the condemnation of Rambler real estate for a right-of-way. This was the second trial, the verdict in the first instance having been $135,000, which was considered excessive by the supreme court.

Kansas City Doings—The Ettwein Motor Car Co., of Kansas City, Mo., has taken the agency of the Wilcox pleasure car and Wilcox truck. The Empire is now handled in Kansas City by a firm made up of F. B. Saufley and Clarence Eubanks. Showrooms will be in the International garage, Fifteenth street and Troost avenue, until permanent quarters are secured. Kansas City's newest store is the Velie branch headquarters, a three-story building that will be ready for occupancy by December 15. The place is at Thirty-third and Main streets.



HANDSOME SALESROOM OF BAGNELL AUTOMOBILE CO. OF ST. LOUIS

Brief Business Announcements

Lansing, Mich.—The Bemb Auto Sales Co., of Detroit, has been incorporated with a capital stock of $10,000.

Houston, Tex.—W. O. and C. B. King has closed a contract for agencies in both Galveston and Houston for the Kisselkar.

Cleveland, O.—The Zimmerman Realty Co. has just let a contract to the L. W. Mackenzie Co. for the erection of a garage on East Sixty-fifth street.

San Francisco, Cal.—Walter Morris, who is the local representative for the Autocar, is now installed in his new quarters on Golden Gate avenue, near Van Ness.

Louisville, Ky.—The Atlas Machine Co. has been incorporated with a capital stock of $25,000, and will manufacture and deal in machinery and also operate a garage.

Memphis, Tenn.—The Great Southern Automobile Co., of Birmingham, Ala., has been incorporated with a capital stock of $100,000, and is to manufacture motor cars and motor trucks.

Chicago—The Globe Power Co. has been incorporated with a capital stock of $30,000, to manufacture and deal in machines of all kinds, establish garages, etc. The incorporators are G. C. MacArthur, A. Shelden and E. J. Stanley.

Trenton, N. J.—Harry J. Stout has bought the Central garage, near East State street, where he will locate his Pullman headquarters, carrying this car exclusively. The agency for the Autocar during the coming season will be held by R. C. Manning.

Buffalo, N. Y.—The Auto Car Mfg. Co. is planning to enlarge its present plant at Elmwood and Hertel avenues so as to increase its annual output from 300 cars to 700 machines. The concern is engaged in the manufacture of motor trucks and sightseeing cars.

San Francisco, Cal.—The Taxi Co., of San Francisco, has been organized with a capital stock of $100,000, to do a general passenger and freight traffic business. Among those interested in the company are R. M. Pife, Q. M. Kidd and S. S. MaChill.

Chicago—The Anderson Carriage Co., of Detroit, Mich., maker of the Detroit electric, is planning to open a branch in this city and already has made arrangements for the erection of a new building on Michigan avenue near the home of the Pierce-Arrow.

Albany, N. Y.—The Frank S. Bump Co., of Binghamton, has been incorporated with a capital stock of $10,000, by F. S. Bump, A. S. Bump and Maud L. Bump. The Rudd Taxi Co., of Brooklyn, has filed articles with a capital stock of $5,000, and is to operate a taxicab service. The incorporators are B. R. Shears, B. W. Rudd and W. V. Burke.

Indianapolis, Ind.—The Oswald Motor Co., of Goshen, has increased its capital stock from $30,000 to $40,000.

Indianapolis, Ind.—The Gibson Automobile Co., of 238 Massachusetts avenue, has been appointed agent for the Continental Caoutchouc Co.

New York—Henry Molzen, who is engaged in the manufacture of tops, has leased for a term of 10 years the building at 527 West Thirty-seventh street.

New York—The Colt-Stratton Co., Inc., has been incorporated with a capital stock of $125,000, to manufacture motors, engines, machines, cars, carriages, etc.

Atlanta, Ga.—The Southern Commercial Motor Car Co. has been appointed agent for the Cartercar and will handle this machine in connection with the Rapid motor truck.

Boston, Mass.—E. N. Goding has been appointed trustee in bankruptcy for the American Automobile Engine Co. It is likely that the plant of the company at Jamaica Plains will be sold.

Brooklyn, N. Y.—The Pierson Motor Supply Co., of 1175 Bedford avenue, has put a new gas tank, to be known as the Meteor, on the market. J. F. Farman, formerly with the General Auto Supply Co., is the manager of the local company.

St. Joseph, Mo.—The American Automobile and Supply Co. expects to be installed in its new building at Thirteenth street and Frederick avenue by December 1. The company is to represent the Stoddard-Dayton, Haynes, Reo and Rider-Lewis cars.

Bartlesville, Okla.—Cherokee Motor Car Co., capital stock $2,000. Incorporators, O. C. Staples, T. C. Ferguson and W. Phillips.

Jersey City, N. J.—Suburban Motor Transit Co., capital stock $100,000; to operate motor cars both for passenger traffic and freight. Incorporators, J. A. McClary, of Rahway, G. L. Burton, of New Brunswick, and T. J. Gantly, of Jersey City.

East Orange, N. J.—Motor Parts Co., capital stock $125,000; to manufacture motors, engines, machines, etc. Incorporators, W. D. Sargent, G. M. Judd and E. H. Fallows.

Echo, N. Y.—Only Car Co., capital stock $300,000; to manufacture motor vehicles, engines, aeroplanes, motor boats, etc. Incorporators, R. E. Lober, J. D. Castlow and R. Fishel.

Brooklyn, N. Y.—Rudd Taxi Co., capital stock $5,000; to manufacture cars, cabs, vehicles, etc. Incorporators, B. R. Shears, B. W. Rudd and W. V. Burke.

Springfield, Ill.—Springfield Motor Car Co., capital stock $100,000; to manufacture and deal in parts and accessories. Incorporators, H. C. Medcraft, A. H. Rankin and B. C. Vancil.

New York.—Banman Auto Co., capital stock $5,000. Incorporator, Philip Gottlieb, of Brooklyn.

In the future the Cadillac car is to be represented in this city by the R. R. Kimball Auto and Supply Co.

Indianapolis, Ind.—The Westcott Carriage Co., of Richmond, has changed its name to the Westcott Motor Car Co.

Harrisburg, Pa.—Articles of incorporation have been filed by the Continental Motor Car Co., of Philadelphia, with a capital stock of $10,000.

Philadelphia, Pa.—Until the completion of its new salesrooms the local branch of the Winton Motor Carriage Co. will be located at Broad and Race streets.

Wilmington, Del.—G. P. Postless, who is the agent in this city for the Chalmers-Detroit and Hudson also has taken the representation of the Baker electric.

Peru, Ind.—The Peru Auto Parts Co., which is a branch company of the Salisbury Wheel Co., of Jamestown, N. Y., will begin business here within the next few months.

Cleveland, O.—H. S. White & Co., who have just opened headquarters at Euclid avenue and Thirty-ninth street, have been appointed representatives in this city for the Pierce Thirty, of Racine, Wis.

Portland, Me.—The Cushnoe Co., of Augusta, has been incorporated with a capital stock of $100,000, to deal in engines of all kinds. The incorporators are C. B. and L. A. Burleigh and W. J. Skehan.

Lansing, Mich.—The University Motor Car Co., of Detroit, has been incorporated with a capital stock of $100,000. Another new company to be organized is the Anhut Motor Car Co., which has a capital stock of $150,000, and which is to make its home in Detroit.

Philadelphia, Pa.—The former plant of the International Match Co., which is located at Wharton street, between Saylor and Twenty-fifth streets, has been purchased by the Boyd Brothers Co., and will be utilized for the manufacture of motor car fire extinguishing apparatus.

Wilmington, Del.—C. R. Holt has just purchased the property at 811-813 Tatnall street, and has let a contract to J. E. Healey & Son for the erection of an up-to-date garage to cost $8,000. The new structure is to be known as the Delaware garage.

Streator, Ill.—The Pontiac Motor Car Co., in addition to manufacturing its own car, will act as agent for the Ford. Anton Fischer is the president of the company. Fred Taylor, secretary, and I. A. Morrison, treasurer. The company has leased the Armory building on West Madison street, where both the plant and offices of the concern will be located.